

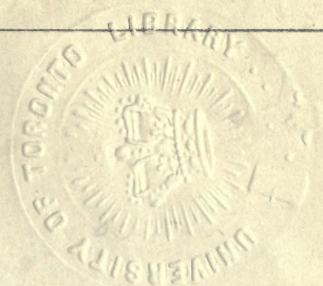
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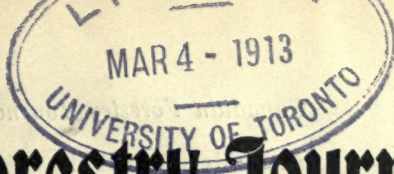
TABLE OF CONTENTS

- Alpine Club of Canada, 95.
 American Forestry Assn., annual meeting, 3.
 Biltmore Forest School program, 127.
 Booth, John R., 53; gift to hospital, 191.
 Booth's Mill, Ottawa, fire at, 135.
 Brantford, Ont., Dams to Protect, 190.
 Britain, Afforestation in, 154.
 British Columbia, forest regulations, 55;
 branch organization, 85; work in, 105,
 155, 174; fire season 1913, 184.
 Broilliard Monument, 169.
 Canadian Forestry Assn., annual meeting,
 19; constitution and by-laws, 29; Direc-
 tors' report, 40.
 Canadian Lumbermen's Assn., annual
 meeting, 23.
 C. P. R. publicity, 135; forestry work, 168.
 Catalpa, Hardy, warning about, 191.
 Charlton, Hon. W. A., Pres. Can. For.
 Assn., 19, 113.
 Chestnut Tree Blight in Pennsylvania, 45.
 Cigaret, the dangerous, 156.
 Civil Service, reform, 1; efficiency, 84;
 regulations, 146.
 Commercial Forestry, 170.
 Commission of Conservation, annual meet-
 ing, 8; work of, 134.
 Cross Ties purchased in 1912 (Dom. For-
 estry Branch Bulletin), 94.
 Delegates to Winnipeg Convention, 114.
 Dominion Forest Service, outline of organ-
 ization, 51; parties in field, 93; work of,
 137; forest products laboratory, 154;
 work of, 154, 165.
 Dry Weather Causes Fires, 133.
 Dynamiting Forest Fires, 140.
 Empire State Forest Products Assn., 194.
 European Forestry, 11.
 Fire Bug and the East Wind (poem) E. T.
 Allen, 153.
 Fire Prevention Organization, 180.
 Fires, Havoc by, 122.
 Fisher, Hon. W. L., address of, 4.
 Floods, How to Prevent, 71.
 Forest Conservation, 83.
 Forest Engineers, notes of work, 13, 30, 46,
 62, 110, 139, 158, 173, 192.
 Forest Fire Legislation, Report of Commit-
 tee on, 117.
 Forest Insects in British Columbia, 166.
 Forest Protection in Canada, 187.
 Forest School Notes, 150.
 Forestry Movement, 17.
 Forestry, Problem of, 25.
 Forests and Snowslides, 70.
 Genesee Valley Forestry Assn., 38.
 Hay, the late Dr. G. U., 82.
 International Bureau of Forestry, 124.
 Laboratory, Dominion Forestry Branch for
 Forest Products, 82, 154.
 Laurentide Company, Forestry Work of,
 173.
 Log Rule, Uniform, report on, 21, 108.
 Malloch, Douglas, book of poems, 142.
 Manitoba, native woods, photograph, 136.
 Maple Sugar Makers Protest, 178.
 National (U. S.) Conservation Congress,
 185.
 New Brunswick, foresters, 71; new timber
 leases, 121; forest school, 150; brush
 disposal in, 190.
 N. Y. State Forestry Assn., 39, 164.
 N. Y. State Forestry College Museum, 132.
 Norfolk County Replanting, 151.
 Norway, tree planting in, 172.
 Nova Scotia Lumbering, 119.
 Ontario Forests, Report of Minister of
 Lands and Forests, 163.
 Ontario, Northern, Timber resources of,
 181.
 Ottawa's Water Supply, Protection of, 169.
 Patronage Evil, 162.
 Patton, M. J., 126.
 Peace River District, conditions in, 131.
 Pejepscot Company, replanting, 37.
 Piché, G. C., Chief Forester of Quebec, 150.
 Pinchot, Dr. Gifford, 5.
 Plan Adequate to Meet our Needs for Tim-
 ber, 147.
 Plantations in Foreign Countries, 56.
 Power, Wm., Vice Pres. Can. For. Assn., 21.
 Price, the late Herbert M., 67.
 Problem of Forestry, 25.
 Progress of Forestry, 69.
 Protection along Railways, 153.
 Pulpwood, Dom. For. Branch Statistics for
 1912, 54.
 Quebec, planting operations, 98; Forestry
 Dept., 119, 138; Fire Protection, 139;
 Provincial Nurseries, 149; Forest Ser-
 vice, 159, 167; Forest Revenue of, 191.
 Quinn, the late Maurice, 82.
 Railway Fire Protection, 28, 99.
 Ranger Schools, 1.
 Reserve Regulations Revised, 157.
 Riordon Carl, Pres. Pulp and Paper Assn.,
 55.
 Rocky Mountains, Forestry in, 74; Reserve,
 142.
 Sable Island, the Problem of, 91.
 St. Maurice Forest Protection Assn., 35.
 Sawdust Utilization, 43; Briquettes, 143.
 Settlers, Securing Sympathy of, 102.
 Sharples, Hon. John, death of, 135.
 Slash Disposal, Government and Loggers'
 Co-operation in, 120; in New Brunswick,
 171.
 Statistics of Timber Products in Canada
 1912, 123.
 Sweet and Slow (poem), 38.
 Thinning — Should New Brunswick For-
 ests be Thinned, 87.
 Top-logging and Dynamiting Fires, 140.
 Toronto Students at Ontario Nursery, 73.
 Tree Planting C. P. R. Competitions, 7.

- Turtle Mountain, why not a forest reserve
in United States, 89.
United States Forests Revenue, 172.
U. S. National Conservation Congress, 157,
185.
Western Farmers and Trees, 172.
- Winnipeg Convention, 33, 49, 65, 81, 97;
Report of, 115; Picture of Delegates, 114.
Woodlot, care of, 103.
Work of Forest Engineer, 58.
Zavitz, E. J. Provincial Forester of On-
tario, 28.

INDEX OF AUTHORS

- Allen, E. T., 153.
- de Hurst, A. E., 83.
Dickson, J. R., 69.
Dwight, T. W., 51, 57.
- Fernow, Dr. B. E., 147.
- Gilbert, A. V., 55.
Graves, Henry S., 25.
- Hearst, Hon. W. H., 181.
Howe, John D., 87.
- Jacombe, F. W. H., 91.
- Lakes, Arthur, 70.
Leavitt, Clyde, 187.
Loggie, Lt.-Col. T. G., 190.
- MacMillan, H. R., 105.
Malloch, Douglas, 142.
Morton, B. R., 103.
- Recknagel, Prof. A. B., 168.
Retan, Geo. H., 56.
Ross, A. H. D., 58, 183.
- Swaine, J. M., 166.
- Turnbull, W. R., 171.
- Wilson, Ellwood, 140, 170, 172.
Wilson, F. D., 131.



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CONTENTS:

	Page.
Notes	1 and 2
American Forestry Association	3
Tree Planting Competitions	7
Commission of Conservation	8
European Forestry	11
With the Forest Engineers	13

RANGER SCHOOLS.

In the City of Ottawa it has been found profitable to give the city firemen a course of instruction on chemicals, water pressure, building construction, etc. The lectures are held once a week and are supplemented by practical demonstrations. The men of the Ottawa fire brigade are all selected for efficiency and are supposed to know the essentials of their work. At the same time it is felt they will be vastly more efficient if given definite instruction by experts on certain parts of their work. In the same way it is the contention of the Canadian Forestry Association that forest rangers should be selected for efficiency in the first place, and that they should further be given specific instruction for a few weeks by men who can assist them by advising how to combat difficult situations that are likely to arise in the woods. If city firemen, who are always under the direction of chief and lieutenants, will be benefited by instruction, much more will the firemen who during a large part of the year has to work single handed many miles from his nearest neighbor.

NOTICE.

In regard to this issue of the Canadian Forestry Journal it may be stated that it has been decided to carry on the publication as a monthly. Further particulars will be given in the next issue.

CIVIL SERVICE REFORM.

On all sides there is evidence of growing determination to separate politics from the civil service. In the Dominion in addition to the reports of Sir George Murray and the Special Commission, the Civil Service Association is pressing for the extension of Civil Service regulations to the outside services. There are similar movements in Ontario and Manitoba, and the newspapers of all political parties are asking for the change. By the very nature of things there is no department where the plan of appointment and promotion by test and merit is so necessary as in the forest service. Here by reason of the conditions under which the men work they are constantly thrown on their own resources to confront unexpected problems, and the best men are needed.

A MONUMENT TO A TREE.

Attention has just been called to a unique ceremony which took place last summer near Morrisburg, Dundas County, Ontario, Canada. On this occasion a monument was unveiled to an apple tree. The farmers of Dundas County raised the money by popular subscription and placed a marble stone close to the

spot where the original McIntosh Red apple tree stood. The newspapers in describing this ceremony stated that in 1797 John McIntosh, who was one of the United Empire Loyalists, came to Upper Canada from the United States and settled in Dundas County. On the ground which he cleared for a home he found a number of young wild apple trees. He tested these and one produced fruit of such superior colour and quality that he named it McIntosh Red. His son Allan propagated from it and disseminated the variety, which has become popular over a large part of the continent. In 1893 the old tree was injured by fire, but continued to bear till 1908 when it completely died down.

TEACHING CHILDREN TO LOVE TREES.

The New York State College of Forestry at Syracuse University, designated and established by the Legislature for educational work in forestry in New York, has sent a letter to the Principals of all the High and Preparatory Schools of the State offering to give illustrated lectures and demonstrations upon forestry before the schools so that every pupil in these schools may understand what forestry is and may learn to love the trees and forests.

LUMBERING AS A SCIENCE.

British Columbia Magazine.

Asserting that lumbering should be regarded as a science and as a profession, the British Columbia Lumber and Shingle Manufacturers' Association and the Canadian Forestry Association have asked for the establishment of a course in logging engineering at the new University of British Columbia. The success which has attended the agricultural colleges of Canada and the United States in equipping the farmers' sons with a scientific knowledge of husbandry, is

evidence of what might be expected from similar courses devoted to logging engineering. The courses of study in our agricultural colleges have been intensely practical and helpful. The lumber industry deserves the same consideration for those who desire to become expert loggers and lumbermen, in the broadest sense of the term.

CIVIL SERVICE PROMOTION.

Hamilton Herald.

Promotion by personal favoritism and political 'pull' instead of promotion by merit and seniority is one of the gravest abuses of the Canadian Civil Service. It is a deep-rooted evil, and as old as the service itself. It impairs the efficiency of the service by putting a premium on inefficiency. Able men in the public service are deprived of the natural incentive to do their work well and qualify for higher duties. When it is known that efficiency does not count for much, and that the man who bases his hopes for promotion solely on his efficiency has no chance in competition with the man who has an influential relative or political friend to work for his advancement, why should men waste time and energy in improving themselves? The system operates to kill honorable ambition to excel. It tends to lower the personnel of the Civil Service to a dead level of mediocrity.

AFTER THE GYPSY MOTH.

The Canadian Department of Customs has issued an order prohibiting the importation from New England states of forest plant products including logs, tan bark, posts, poles, railway ties, cordwood and lumber, unless accompanied by a certificate from the United States Department of Agriculture that such products are free from the gypsy moth.

American Forestry Association

A Vigorous and Progressive Campaign now Going on.

It was deemed advisable this year that the Secretary should attend the annual meeting of the American Forestry Association in Washington, D.C., on Jan. 8. This proved a very profitable trip and much valuable information was gained, particularly owing to the fact that several related organizations met in Washington at the same time. This enabled the Secretary to converse in a day and a half with more of those connected with forest conservation

work in the different parts of the United States than he could have met in several weeks steady travelling at other seasons of the year.

FULL OF FIGHT.

The spirit throughout was one of optimism and at the same time the sentiment was constantly expressed that a most determined attack was about to be made on the natural resources held by the federal government of the United States, mineral



Wolves in Sheep's Clothing.

The Newark, N.J., *Evening News* had the above cartoon as its view of the remarks of Mr. Gifford Pinchot that States Rights would be made a cloak for exploitation.

lands, water-powers and forests, but particularly the latter. The general idea, however, was that the friends of conservation were more wide-awake than ever, and on every hand there were expressions of determination to work, to fight and to make sacrifices to have these resources developed and used for the very best interests of the whole country, and to keep them from falling into the hands of trusts and corporations with no other object than to exploit them for the greatest present profit regardless of the future.

The sessions were held in one of the halls of the magnificent New Willard Hotel. There was a meeting of Directors at 10.30, the general business opened at noon, and at one o'clock the assembly adjourned to an adjoining dining room where lunch was served to about one hundred and twenty five including quite a sprinkling of ladies. It may be remarked in passing that while this luncheon was in every way strictly first class the determination of the American Forestry Association to keep their organization as democratic as possible was shown in the fact that the charge for tickets for the luncheon was only \$2 apiece. This was in all respects a most enjoyable function and at the close there were several significant speeches.

HON. W. L. FISHER.

Hon. Walter L. Fisher, Secretary of the Interior, made a most illuminative address in which he emphasized two points. The first was that the cause of forest conservation had lost in the past and would continue to lose in the future if its friends did not kill the old belief, industriously propagated by its enemies, that conservation meant negation, stagnation, the locking up of forest resources and the keeping back of development indefinitely. The thing which conservationists must now do was to show the public, what they knew to be the case themselves.

namely, that conservation was affirmative constructive and progressive. And second, he told the great steps forward that had been taken in the past year in the matter of disposal of water-powers on federal lands. Up to 1912 there were only two methods of developing water-powers. The water-powers might be deeded outright to the applicant or they might be leased to the applicant on a lease which could be revoked without five minutes' notice by the Secretary of the Interior. During 1912 the law had been so amended that water-powers could be now leased for a period not to exceed fifty years, the rentals to be reviewed and if necessary readjusted every ten years. Where the government and the applicant were not able to agree upon the new rent to be charged at the end of any ten years' period the matter was to be settled by arbitration and the onus was on the lessee to show that the rent was too high. While at first some of the organizations claimed that no water-powers would ever be developed under the leasing system, the great majority had admitted that the system was fair. As confirming this Mr. Fisher pointed to a lease to a powerful corporation of rights which would result in the immediate future in the electrification of five hundred miles of main line of one of the transcontinental railways. A leading railway man had told him that this was just the beginning and that within a few years under the same system twenty thousand miles of railway lying between the Rocky Mountains and the Pacific Ocean would be electrified. He had drawn attention to the fact that this was a powerful corporation as showing that this was not a case of the government 'squeezing' a small concern that was not able to take care of itself. He predicted that under this new system a very rapid development of water powers on national lands of the United States would take place, and this

development would be on terms fair both to the lessees and to the nation at large.

This announcement of a new arrangement in this important matter was received with prolonged applause.

HON. GIFFORD PINCHOT.

Mr. Fisher was followed by Hon. Gifford Pinchot, who in a forceful speech held that the 'predatory interests' having come to the conclusion that no more plums were to be snatched from the national tree had decided to make a last effort to have the federal resources divided up amongst the states in the belief that they would be able to get from poor and struggling states what they could not demand from the strong national government. To this end he predicted that the next session of Congress would see a tremendous revival of the States Rights movement. The danger was this that while this States Rights cry would be raised largely by men who cared not a straw for the states and who cared altogether for their own pock-

ets, yet there would be others in the States Rights ranks who would be actuated entirely by principle and a sense of duty. This made the fight all the harder, but the friends of conservation must win, for if they did not the work of the last twenty five years would be lost, and within a few months the immense natural resources of the United States would be in the hands of the grabbers. That this was a prize worth fighting for he indicated by estimating that the forests of the United States alone were worth two thousand million dollars.

STATE VERSUS FEDERAL CONTROL.

After Dr. Drinker (President of Lehigh University) the new President of the American Forestry Association had made his confession of faith and started out the fiery cross to rally all good men to the cause of conservation, the regular session was resumed in the assembly hall. Here papers were read by Prof. H. H. Chapman of Yale University on federal versus state management of forests, and by Mr. W. B. Greeley



Travelers in winter on the route of the Hudson Bay Railway North east of the Pas.

of the United States Forest Service on the need of trained men in forest conservation. The conclusion of the first paper was that for many reasons the federal government was better fitted to do forest work than the states, and this was also indirectly the conclusion of the second paper. It was pointed out that a forest was of such slow growth that working plans must be made looking for almost a century ahead. These plans had to take in the whole country, and in many cases they would result in the spending of millions of dollars spread over a long period of years before the cash returns from a particular tract began to come in. The federal government with its large revenues and its power to employ the best men in the nation was much better fitted to systematically manage the forests than a state legislature which was often in such desperate need of funds that instead of allowing a forest to grow till fit to be harvested, would be constantly pressed to sacrifice this asset for whatever it would bring in the immediate present. It was impossible that twenty struggling states could secure and hold twenty staffs of forest engineers for the general direction of the work who would be anything like as competent as the staff which could be secured by the national government to do this same work for the whole nation.

INTERESTING THE POLITICIANS.

In the evening there was a 'smoker' at a leading restaurant given by the local members of the American Forestry Association to which the delegates and their friends were invited. The advantages possessed by such a non-governmental and non-partizan organization such as the American Forestry Association (or the Canadian Forestry Association) were shown in the fact that administrators, lumbermen, foresters and representa-

tives of both political parties met here on common ground and delivered their views. Among those who spoke were Mr. Henry S. Graves, United States forester; Mr. Chas. Lathrop Pack, President of the National Conservation Congress; senators and congressmen both Republican and Democrat. Mr. E. A. Sterling, forest engineer of Philadelphia, well known in Canada, was the chairman of the evening. While all the views expressed were not enthusiastically in line with the aims of the American Forestry Association, yet a surprisingly large majority were, and the minority speakers represented points of view which conservationists must take into consideration in making up their program.

THREE ACTIVE ORGANIZATIONS.

One matter of importance brought out at this annual meeting was that in the United States three active organizations are now co-operating in conservation work. These are the National Conservation Congress, which devotes its whole energy to carrying out a four days' congress each year in some leading city of the United States; the National Conservation Association (of which Mr. Gifford Pinchot is President), which devotes its attention to national legislation; and the American Forestry Association, which lays its chief stress on propaganda by means of literature, and which is in a sense the mouthpiece of the other two. Canadians have not a little to learn from the enthusiasm and spirit of sacrifice with which the members of these organizations approach their self-imposed tasks.

Before leaving for home again at noon the following day the Secretary visited the offices of the United States Forest Service and of the American Forestry Association gathering information for his work, which it is believed will bear fruit in the present year.

Tree Planting Competitions.

Railway companies come in for no little criticism because of the damage it is alleged they do to forests, and it is, therefore, only fair to chronicle what they are doing on the other side of the scale.

The Canadian Pacific Railway has just announced a competition in the growing of shelter-belts on farms purchased from the railway in Alberta south of Township 28. To encourage farmers to take up this competition the company are offering cash prizes aggregating \$2,400. There is one sweepstake prize of \$600,—two grand prizes of \$300 each two of \$100 each, and 20 prizes of \$50 each. As a further inducement the Company is giving the contestants half the trees required free of charge, and has arranged the following prices for the other half:—one thousand trees or over, \$15 per thousand; under one thousand, \$5 per hundred. The following varieties are furnished:—Russian poplar, cottonwood, green ash, Manitoba maple, laurel-leaf, willow and caragana. Besides prizes and trees, the company's Forest Department stands ready to supply any information in regard to trees and planting.

Prizes are to be awarded in the autumn of 1914. Settlers who gain prizes then will be allowed to go on and compete for special prizes which may be awarded in the next three years. Wind-breaks in this competition must be planted in the Spring of 1913. The chief points to be considered when judging are as follows: preparation of the soil, 30 points; cultivation and care of trees, 30 points; bush-fruits, shrubs and flowers, 10 points; growth and appearance of trees at time of judging, 30 points; total, 100 points.

Having started out on this campaign the Canadian Pacific Railway is

explaining why it is doing so. The circular announcing the competition is accompanied by a neat circular entitled 'Increase the Value of Your Farm: Why Every Western Canadian Farmer Should Plant Wind-breaks.' The eight pages of this circular are filled with reasons why wind-breaks increase the value of Alberta farms, and with directions for attaining the best success in planting.

Time was when people believed trees could not be successfully cultivated west of Manitoba. Now, with twenty million trees sent out from the Dominion Government Forestry Branch nurseries at Indian Head, and with the C.P.R. pushing on the good work, the appearance and comfort of thousands of prairie farms will soon be changed for the better by the shelter-belts of millions of healthy trees.

MERIT SYSTEM IN FOREST SERVICE.

Conservation.

On December 6, a delegation representing the Canadian Forestry Association urged upon Premier Borden and the Minister of the Interior, that all appointments to the outside Dominion Forest Service be based on capability and experience ascertained by examination conducted by the Civil Service Commission. These representations are the result of recommendations made at the last meeting of the Association held at Victoria, B.C.

The winter is the best time to study evergreen trees. Find how many of the following are near your school: white pine, red pine, scrub or Labrador pine, fir, white spruce and red spruce, hemlock, white cedar.—*Educational Review.*

Commission of Conservation

Brief Report of the Fourth Annual Meeting at Ottawa, Jan. 21, 22, 1913.

The fourth annual meeting of the Canadian Commission of Conservation held in the Carnegie Library, Ottawa, Jan. 21 and 22, gave evidence of steady growth. In the absence of Hon. Clifford Sifton in Europe the meetings were presided over by the Acting Chairman Hon. W. C. Edwards, Chairman of the Committee on Forestry. The sessions were well attended and nearly all the provinces were officially represented. The first morning was devoted to reports of work done during the year as follows:

Public Health—Dr. C.A. Hodgetts.

Mines—W. J. Dick.

Forests—Clyde Leavitt.

Extension of forest reserves and establishment of game preserves in Alberta—R. H. Campbell.

Fisheries, game and fur-bearing animals—M. J. Patton.

Fur-farming in Canada—J. Walter Jones.

Waters and water-powers — Leo G. Denis and Arthur V. White.

Press and co-operating organizations—M. J. Patton.

The first afternoon was taken up by an illustrated address on the Salmon Fisheries of British Columbia by Prof. J. P. McMurich, Director of the Anatomical Department, University of Toronto, and by meetings of committees.

At the Wednesday morning session the following was the order of the work:

The Biological Board of Canada—Dr. E. E. Prince.

Trent Watershed Survey and Reconnaissance Survey of the Northern Ontario Clay Belt—Dr. B. E. Fernow.

Insect Food of Fresh-water Fish—Dr. C. G. Hewitt.

Work done by the Lands Committee during the past year—F. C. Nunnick.

Address on work of Lands Committee—Dr. J. W. Robertson.

Committee work and resolutions occupied all of Wednesday afternoon, and in the evening there was an illustrated address on Smoke Prevention by Dr. R. G. Benner.

Among the matters which related to forest conservation were the following:

Mr. Clyde Leavitt, Forester of the Commission of Conservation and Chief Fire Warden of the Board of Railway Commissioners for Canada, gave the results of organizing the patrol work along the railway lines in Western Canada and intimated that in 1913 this work would be extended all over Eastern Canada as well.

DOMINION FORESTRY WORK.

Mr. R. H. Campbell, Dominion Director of Forestry, told of the setting aside of the forest reserve on the eastern slope of the Rocky Mountains and of examinations made in 1912 of areas in the Peace River Country and in the northern parts of Saskatchewan and Manitoba. He pointed out that not all of the reserves were game preserves but that such areas were being set aside for this purpose as would best conserve the characteristic game of Western Canada. The number of trees distributed by the Dominion Government Forestry Branch to settlers now amounted to 21,000,000 and four million more trees were ready at Indian Head Forestry Nursery Station to be sent out this coming spring. These were for wind-breaks and woodlots not for orna-

mental purposes. The varieties sent out were Manitoba maple, elm, cottonwood, green ash, willows, and some conifers as tamarack, white spruce, jack pine and Scotch pine.

TRENT VALLEY WATERSHED.

Dr. Fernow, Dean of the Faculty of Forestry, University of Toronto, said that in what had been termed the forest townships which comprised nine tenths of the 1,800 square miles in the district examined, the amount of land cleared was about nine per cent. Of this 8.4 per cent. was pasture and only 1.6 per cent. cultivated land. The general conclusion was that this area should have been protected and left to grow up again as a pinery. So unsuited was the district for farming that since the lumberman had left the families on the land were eking out a poor existence and should be given a chance to remove to better locations. It was estimated that after the fires had destroyed many millions' worth of property there was still left white pine young growth which mature would be

worth \$3,500,000, and pulpwood of potential value of \$4,500,000. Action looking toward the protection of this was urged. It was noted that Hastings County had acquired 2,200 acres of this area under tax sales for an average of seventeen cents per acre and was holding it for reforestation.

Regarding the northern clay belt of Ontario Dr. Fernow held that about fifty per cent. of the timber would be valuable for lumber or pulpwood, and he urged a classification of lands before allowing settlement to come in.

FUR FARMS AND ANIMAL SANCTUARIES.

Mr. M. J. Patton, the Assistant Secretary of the Commission in one part of his report dealt with the need for a system of national game refuges to preserve the beaver. This animal disappeared in Europe in the sixteenth century and would disappear in America in the twentieth unless national provision was made for its protection.

Very interesting was the report of



Camp in the Timbered Country between the Pas and Split Lake, Manitoba.

Mr. J. Walter Jones, B.S.A., special officer, upon fur-farming in Canada. He estimated that there were about four hundred fur farms in Canada at the end of 1912 with the number rapidly increasing. Most of these were in the Maritime Provinces, particularly Prince Edward Island where the rearing of black foxes for their fur had become a great industry.

Col. Wm. Wood of Quebec sent a paper on animal sanctuaries which was read by Mr. Patton. The plan advocated was to begin with a sanctuary in Labrador and then secure others in different parts of Canada later. A sanctuary, the paper explained, differs from a reserve in that the animals are never disturbed in season or out of season within the area. Thus left alone they multiply rapidly, and once the area is stocked the surplus seeks new pastures outside and thus the supply of game for the sportsmen is kept up in the rest of the country.

IMPORTANCE OF FISH FOOD.

The fishery question was dealt with by Prof. Prince, Dr. C. C. Jones, Chancellor of the University of N.B., and others. The chief contribution of interest to forest lovers was by Dr. C. Gordon Hewitt, Dominion Entomologist, in his paper on the insect food of fresh water fish. Dr. Hewitt pointed out that one of the causes why fish died when placed in lakes and rivers where the species had not been before was that the insects upon which that fish fed were absent. Before stocking lakes an examination should be made to ascertain if the proper insect food were there.

RECOMMENDATIONS.

The following recommendations in the report of the Committee on Forests were adopted:

(1) That the Commission approve the principle of co-operation between the Board of Railway Commissioners and the fire pro-

tective organizations of the Dominion and Provincial Governments in the administration and enforcement of the fire regulations of the Railway Commission, along the lines now in effect in the West and as proposed in the East.

(2) That representations be made to the Dominion Government looking toward the establishment of a fire-protective service along the Intercolonial and National Transcontinental Railways similar to that provided for in Order 16570 of the Board of Railway Commissioners.

(3) That the Governments of New Brunswick and Nova Scotia be urged to organize separate branches devoted especially to forest fire work, including all lines of railway fire inspection, as well as the handling of fire-ranging throughout the Provinces at large. Also that control be definitely taken over with regard to fire-protection along provincially chartered railways, through the enforcement of existing legislation or the enactment of new legislation where necessary.

(4) That the Commission urge the Dominion and all Provincial Governments not doing so, to consider carefully the question of brush disposal in connection with all new licenses and renewals of old licenses issued in the future. Especial care in this connection is needed to safeguard the country along railway and wagon roads. Especially in Ontario, New Brunswick and Nova Scotia and in the Timber Branch of the Department of the Interior is the further development of a forestry organization essential in order to properly study and administer this feature of the work.

(5) That the Commission approve the organization of co-operative fire-protective associations of limit-holders, and the principle of contribution by the Dominion or Provincial Government in proportion to the benefits received.

(6) That the Dominion Government be urged to begin a systematic study of the extent and character of forest resources in the forest reserves, and other forest lands under its direct jurisdiction; and that a similar course be urged upon the Provincial Governments of Ontario, Quebec and New Brunswick as to forest lands within their boundaries.

(7) That the systematic collection of complete statistics of forest fire losses be urged upon the Dominion and Provincial Governments wherever this action is not now being taken.

(8) That the Commission approve co-operation with the Government of Ontario in an examination of forest conditions outside forest reserves in the northern portion of that Province, south of the Clay Belt, and that reciprocal action by the Ontario Government be invited along this line, as

well as in developing a plan for recuperative measures in the Trent Watershed.

(9) That representations be made to the Dominion Government, urging that favourable action be taken with regard to the proposed additions to the Forest Reserves recommended by the Forestry Branch.

(10) That the proposed establishment of a game preserve in the southern portion of the Rocky Mountains Forest Reserve, and in southeastern British Columbia adjoining the Glacier National Park, be endorsed; and that favourable action be urged upon the Dominion Government and upon the Government of British Columbia.

(11) That, whereas, the Provinces of British Columbia, Ontario and Quebec have seen the value of organizing a Provincial Forest Service, representations be made to the Governments of Nova Scotia and New Brunswick, looking toward the establish-

ment of technically educated Provincial Foresters; this action to be taken not only for the purpose of securing a conservative use of the remaining forest resources, but also of stimulating and educating forest owners and woodlot owners in efforts at reforestation.

(12) The Commission desires to place on record its opinion that it is important that all appointments in the forest services of the Dominion and Provincial Governments should be based on capability and experience, such as may be secured through civil service examination.

(13) That the Government of Ontario be urged to undertake a systematic classification of land in the Clay Belt, in advance of settlement, to the end that settlement may be properly directed, and that non-agricultural lands may be reserved from settlement and entry.

Notes on European Forestry.

In an article contributed recently to the *American Lumberman* on a visit to some European forests, in France, Switzerland, and Germany, Dr. Filibert Roth, head of the Department of Forestry at the University of Michigan, gives the following interesting and chatty notes regarding forests and forestry practice in the countries mentioned:—

‘Recently I have visited Grenoble and the beautiful forests of the French Jura, especially about the Grand Chartreuse, that famous cloister of old. The forests here are largely private property, a sort of cared-for wildwoods, with fine growth of fir (balsam) and beech, also other trees. Plenty of them are over thirty inches in diameter and over 120 feet in height. The exploitation is primitive. A load of logs, full-sized stems, is not loaded one by one, but is lifted bodily into a two-wheeled cart and then drawn by five horses hitched tandem.

‘In Switzerland I saw numerous forests, large and small, primarily private and village forests of spruce planted in the regular way. These woods are immensely productive and one sees new plantations everywhere, showing a tendency to increase the forest areas at the expense of the agricultural lands. My visit to the famous Sihlwald, the most ancient of well established forest properties in the world, was made doubly interesting, as I had a chance to spend the Fourth of July in a tour of inspection of this property with Mr. Meister, forester of the city of Zurich, and the society of foresters of Alsace-Lorraine, the latter having

come over sixty strong, from the valley of the Rhine and the Vosges mountains to see this great forest. The city of Zurich sent a special delegate, provided teams and refreshments and in every way showed its appreciation of this visit of foresters. It is a treat to see this beautiful old forest, which has supplied Zurich for fully 1,000 years with much-needed fuel and timber, and which to-day is one of the best producing forests of Europe.

‘This forest occupies large mountain slopes entirely unfit for plow land; it is mainly beech and spruce, with the latter as the favored species. It is managed on a rotation of about 110 years, that is, the trees are left to this age before being harvested, and there is today an almost ideal condition with trees of all ages, so that the harvest comes like clockwork every year in amount and size of timber. Rainfall and snowfall are heavy and the heavy snows sometimes crush stands of timber when in the “pole” stage.

‘Before leaving Switzerland I visited the upper Rhine, where the floods lately have done great damage. The forests in that section unquestionably have reduced this damage and prevented wholesale calamity.

‘Coming into southern Germany I visited the royal forests in Baden, which yield fine incomes. They are largely spruce, planted or reproduced naturally, and produce a net revenue of over \$10 an acre every year. Similar conditions exist in the neighboring forests of the royal family of the King of Wurtemberg. Here the forest is for the

most part cut clean and replanted. The trees are allowed to grow to an age of 110 to 125 years. The forests are gone over once in five or ten years and cleaned of all poor, sickly trees, and opened up where the trees are too dense, so that in the older stands the trees practically are perfect, standing straight and a joy to any lover of good timber. The amount of timber per acre in these hundred-year-old stands is simply enormous, and the amount which has to be cut into fuel or cheap woods is very small, rarely over ten per cent of the total yield. All timber is cut in winter, peeled at once and hauled with team. All work is done by contract. The care which these forests receive is such that when I asked the forester about fires he looked at me in surprise and simply said, "We have no fires."

'As a matter of fact, in all my travels last summer I did not see one acre of woods which showed any signs of ever having been touched by fire. When one compares this with Michigan, where it is hard to find an acre that does not show such signs one wonders where the trouble lies. Here they see to it that law really is law. Roaming in the woods is forbidden; people are expected to mind their business.

'To my great surprise I found that even here, in a good agricultural district, the forest is being extended at the expense of agricultural lands. For example, a farm of 170 acres, which is large for this country, had been in possession of one family for over four hundred years, and was offered for sale. After several years it was bought by the king as a private property and was reforested. The land cost only \$60 an acre, contained a gravel pit valued at \$2,500, and was in good farming condition. Similar conditions were found in Baden, the explanation being that farm land does not produce the income which can be had from forests. Renting farms is generally by cash rentals of \$2 to \$3 an acre, while the forests make a secure net cash rental of over \$10. Since this is an old country, fortified by the Romans, well settled in the days of Charlemagne and densely populated today by one of the most frugal, industrious peoples in the world, these facts will serve to show how utterly nonsensical are the claims of opponents, who would have us believe there is no room for forests, since all land is needed for farming.

'I visited the forestry school at the University of Tuebingen, several districts of the Black Forest in Wurttemberg, also a district of hardwoods in the Rhine valley near Strasburg. In this latter district the black walnut is planted extensively on fertile valley land near the city, again a sign that forests have a place, even in fertile regions. In the Black Forest districts I found many interesting facts. In the higher locations — 2,400 feet altitude, with rainfall of over

seventy inches, heavy snows and much frost — agriculture is on the decline and even the farmers are planting forests. Some of the villages and towns own large forests. Bayersbrom has 6,000 acres of woods, worth over \$200 an acre. Here the fir and spruce predominate. The timber is cut in summer and is peeled. The bark of spruce is sold as tanbark at about \$4 a cord. The forests are reproduced naturally, but everywhere a little planting is done to prevent delay. The stands of timber are certainly fine. Near Obendorf I saw stands which contain over 20,000 cubic feet of timber an acre. Since this stuff is worth fully 15 cents a cubic foot, we have values of \$1,200 to \$3,000 an acre. But this is not rubbish or old pine stubs. It is a body of timber produced by careful treatment and decent protection against all kinds of injury. In such stands there is often not a single tree that needs culling on account of crook or other defect. A fine telephone pole sixty feet long, with ten inches as its upper diameter, is cheaper here than in Ann Arbor, Mich. While generally the small forests of farmers are not in especially good condition, several of the private forests about Freudenstadt are fine and these farmers are becoming really timber growers and are growing rich.'

THE MOUNTAIN PINE BEETLE.

As a result of experiments carried out under the direction of the Department of Agriculture of the United States, a method of combatting the ravages of the mountain pine beetle has been found, according to a recent departmental report. The experiments were undertaken in northeastern Oregon, where beetles had worked havoc over more than one million acres of valuable timber land. The pest had destroyed more than 8,000 trees.

In conjunction with the forest service and private owners of timber, the department's experts confined their efforts to an area of 20,000 acres with such success that while surrounding territory suffered heavily the experiment ground's loss was 80 per cent. less. The march of the beetle to the south and southeast, it is believed, will be checked as a result of the knowledge gained from the tests which have been continued over a space of nearly five years.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

Notes of the Work of the Engineers in the British Columbia Forest Service.

The Province of British Columbia entered on a new line of development in the establishment, under the Hon. W. R. Ross, Minister of Lands, of a Forest Branch, the direction of which as is well known was given into the hands of Mr. H. R. MacMillan late of the Forest Branch in Ottawa. So many matters were pending the passing of the Act, so many new problems have arisen simply through the establishment of the Branch that the new Chief Forester, since assuming his duties, has been the centre of a veritable snowstorm of papers of all kinds which required attention. Consequently, he has been held to his desk for every minute of the day working with unceasing energy to organize new branches to take care of the details. He has made numerous trips around the country becoming acquainted with the government officers and lumbermen, and has made numerous friends in his official capacity in the City of Victoria. Naturally, in a new organization the equipment and staff were utterly inadequate for the press of business. But Mr. MacMillan had the authority to care for the needs of his department, and now, instead of one chief clerk and a stenographer, the Forest Branch consists of forty two individuals in addition to all who were with the Lands Department prior to the creation of the new base of administration.

Mr. M. Allerdale Grainger, who probably knows as much about the forest legislation situation as any other man in British Columbia, having been Secretary of the Royal Commission which brought about the

Act, has been steadily engaged in arranging the details of the Records Office, which falls to him under the provisions for the new Forest Board.

Mr. John Lafon, Chief of Management, has been occupied principally with the work of timber sales and the cruising being done upon tracts of land which it has been thought could be alienated.

Chief of Operation, R. E. Benedict, has been engaged mostly in inspection of fire losses, and in viewing at first hand conditions which he had heretofore known in only a general way. He reports a rapidly growing sentiment among people of all parts of the province for forest reserves to ensure thorough patrol in the vicinity of large towns, and to make certain a constant supply of water for irrigation purposes.

THE RECONNAISSANCE SURVEY.

Since stock-taking ranks with protection as an essential of forest policy, the Branch has lost no time in bringing about a reconnaissance survey of a great part of the province. The Columbia and Western Land Grant comprises two and a half million acres recently sold back to the Government by the C. P. R., to whom it was deeded many years ago, and this tract has been the scene of a very active survey. Under Chief of Surveys H. K. Robinson twelve parties of reconnaissance men are working in the valleys of the Adams, Salmon, Nicola, North Thompson, Omineca and Columbia Rivers, around Mable Lake, and along the route of the Grand Trunk Pacific Railway.

The surveyors are noting every

natural feature, the topography, bodies of water (including water-powers), all the agricultural areas, down to forty-acre tracts, the nature of the soil, and, in a general way, the amount of timber standing. It is expected that the reports which these men will make will prove a revelation to the public. Undoubtedly there are many tracts of land which will produce good crops lying idle because their location is not accurately known.

The difficulties of carrying out this survey are very great, particularly in view of the season, but the ground is being covered as rapidly as possible, and the complete map will be compiled in the course of a few months.

'Timber Sales' have taken the place of the old form of license, under which 14,000 claims were filed between 1905 and 1907.

The Forest Act provides for the removal of timber after advertisement and tender. The land remains always vested in the Crown, and upset price, rental, royalty, cruising and advertising charges are made against the buyer.

So far, a great part of the work of the Branch has been the examination of lands by the foresters for the purpose of arriving at a proper price for the timber. Up to the end of November fourteen bodies were examined, representing an area of 6,716 acres, and 87,282,000 feet of timber. The lumbermen who accept the terms of the Government will pay altogether \$109,521 in upset price, \$1,304.55 annually in rental, and \$48,415.95 in royalties as the material is taken out of the forest. In a great many of these sales restrictions are made as to the time in which cutting shall continue, two years being the average time allowed.

There has been established in the Branch an Extension Bureau, for the purposes of spreading the gospel of forestry among the people of British Columbia, and of rendering

assistance in response to enquiries as to any phase of the problem of scientific management of woodlands. Mr. Roy. L. Campbell has this work in hand.

THE CANADIAN FORESTRY ASSOCIATION.

Extends a cordial invitation to those interested in the forests of this country, from whatever point of view, to join its ranks, and help to spread knowledge of, and interest in, the forests of Canada in particular, and in general of the world. During the past few years the interest in the proper use and the protection and perpetuation of the forests has greatly increased, and to this increased knowledge and interest the Canadian Forestry Association, by its propaganda work, has contributed its share. Founded in 1900, with a membership of 12, it has in twelve years increased its membership to 2,700. During these years it has held conventions throughout Canada from coast to coast, in the Ancient Capital and in the bustling cities of the prairies and Pacific coast, in the manufacturing east and the agricultural prairie country. Its official organ, *The Canadian Forestry Journal*, was started in 1905 and is now in its seventh volume. But as forestry goes on, circumstances change and new needs spring up, and the Association is anxious to do its duty in arousing public interest and pointing out ways of getting things done. One object of the Association was achieved when forest reserves were established; but that is merely a beginning and now proper administration of these reserves, on the basis of the public good, irrespective of any private or partizan interest, must be secured. When that is done other problems will present themselves for settlement. The Association wants the interest and enthusiasm and, in some degree, the contributions of the public. The annual membership fee is \$1.00; this entitles the member to *The Canadian Forestry Journal* for a year, the annual report of the society, and other literature. Life membership costs \$10.00. Applications for membership should be addressed to James Lawler, Secretary, Canadian Forestry Assn., Canadian Building, Ottawa.

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The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

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CONTENTS:

	Page.
Forestry Movement.....	17
Notes.....	18
Annual Meeting C.F.A.	19
Canadian Lumbermen's Assn.	23
Problem of Forestry: H. S. Graves ..	25
Railway Fire Protection.....	28
Constitution and By-laws, C.F.A.	29
With the Forest Engineers	30

CANADIAN FORESTRY JOURNAL.

At the annual meeting of the Canadian Forestry Association and subsequent meeting of the Editorial Committee it was decided to publish the Journal as a monthly, beginning with a sixteen page form. The proceedings of the annual meeting will be found in this issue.

THE NEXT CONVENTION.

It has been decided to hold the next Forestry Convention in the City of Winnipeg in the latter part of July. There will be a good program dealing particularly with prairie problems, though the list of subjects will not be confined to these. There will be special railway rates which will be announced later. Members of the Canadian Forestry Association and friends of forest conservation are requested to keep this time in mind and if possible to attend. Those who expect to attend or who may be able to do so will greatly assist in the work if they will write a note to the Secretary, Canadian Forestry Association, Canadian Building, Ottawa, to this effect.

THE FORESTRY MOVEMENT.

There never was a time in Canada when there was so much interest in forest conservation by wise use as there is to-day. At the same time only a very small fraction of the public has any idea of what true conservation means. Constantly the argument is heard that we cannot afford to keep our forests unused for the sake of posterity. Those who know that conservation means the best use of the forest now and in the future must show, as Hon. Walter L. Fisher pointed out at Washington recently, that the movement does not aim to lock up the forest resources but that it is constructive and progressive, aiming at the immediate use of such forest products as can now be extracted profitably, and looking forward to the highest utilization of the lands, which though admirably suited to forest growth are not suited to anything else.

This is in line with the remarks of Hon. George H. Perley at the banquet of the Canadian Lumbermen's Association, which will be found in this issue. The public does not know as yet that a large part of every country, and of Canada in particular, is fitted only to grow trees and that devoted to that purpose it will produce wealth for the whole nation; while to attempt to farm such areas or to leave them to take care of themselves has resulted and always will result in barrenness, waste, depopulation and poverty.

It is the privilege of every friend of forest conservation to preach it as an affirmative and progressive doctrine. To do this it is necessary to

have definite things to accomplish. The reading of the various articles in this issue will show some of these things, and it is the intention to present the leading issues in concrete form in the *Journal* from issue to issue. The views of those interested in forestry on subjects coming particularly within their ken will be welcomed.

Under the auspices of the Touring Club of France an international forest congress will be held in Paris, France, June 16-20 inclusive. The Government of France is assisting in this work and is inviting representatives from different countries of the world. Two of the leading topics will be, first, co-operation in forestry which will take in the question of relation to agriculture, relation to credit societies, banks, etc.; and, second, the creation of an international forestry bureau similar to the International Agricultural Institute which has its headquarters at Rome.

WANT NATURAL RESOURCES.

At the opening of the Alberta Legislature the speech from the throne concluded with the regret that 'the promises of the federal authorities in regard to the handing over of their natural resources to the prairie provinces has not yet been implemented in the slightest degree. Although requests for conferences on this question have been made, no time has yet been fixed by the federal authorities and I bring this smatter to your attention for such action as you may desire to bring in the interests of the province of Alberta.'

TEN THOUSAND A DAY.

Our Dumb Animals.

In Louisiana alone it is reported that during the short season 10,000 robins a day are killed by brutal men and boys. They are shot, clubbed to

death in the trees where they roost at night in great numbers, slaughtered by the wholesale to be sold for a few cents apiece. And yet the robin and its nestlings are perfect gourmandizers when it comes to making a meal of bugs and caterpillars, the fledglings eating one and two fifths times their own weight of worms and insects each day. No wonder men speak of many of these little birds as 'worth their weight in gold.' How magnificent the economic wisdom of the state that allows their destruction at the hands of men who sell them for less than an ounce of copper!

WIRELESS FOR FIRES.

Lumbermen of Spokane are seriously considering the adoption of the wireless telegraph as an effective aid in fighting fires in the great forests of the Pacific Northwest. On the success of a test to be made next spring by the Marconi company in one of the forests near Spokane hangs the future of wireless as a means of fighting fire.

Special apparatus will be placed on the trails used by the forest rangers, who will carry emergency aerials to string between two high trees at any point in the woods. By this means it is proposed to have reported to a central station any incipient blazes, so that fire-fighting squads may be rushed to the scene in time to prevent the fire from gaining headway.

The weekly report of the Department of Trade and Commerce of Canada recently contained a paragraph from the Birmingham, England, representative of the Department in regard to sugar manufactured from sawdust. The correspondent stated how Mr. A. Zimmerman described the process. In its natural state, he said, wood contained no sugar, but when sawdust was digested with a weak sulphurous acid solution under a pressure of six to seven atmospheres as much as twenty-five per cent. of the material was converted into sugar. This, he said, made a valuable feeding stuff for horses and cattle. He gave instances showing that the food had been tried with good success in different parts of England.

Canadian Forestry Association

Fourteenth Annual Business Meeting

The fourteenth annual business meeting of the Canadian Forestry Association was held in the Board of Trade Rooms, Ottawa, on Wednesday, Feb. 5, beginning at 11 a.m. There was a good attendance of members, probably the largest at any annual meeting when the same was not held during a convention. The names of those present will be found at the close of this article. In the absence of the President, Mr. John Hendry of Vancouver, the Vice-President, Hon. W. A. Charlton, of Toronto, upon motion took the chair.

DIRECTORS' REPORT.

The report of the Directors showed that 1912 had been a very active year in the work of the Association. Two conventions

had been held, one in Ottawa in February and the second in Victoria in September.

In reviewing the forestry situation it was noted that the progress in forest conservation in Canada had been steady during the year. It was estimated that the total expenditure in 1912 on forest protection by federal and provincial governments and by private individuals amounted to about \$1,500,000.

The Dominion Forestry Branch in addition to its protective and tree planting work had made an examination of areas in British Columbia, Alberta, Saskatchewan and Manitoba of lands to ascertain if they should be put into forest reserves.

British Columbia had put into force a new forest act and organized a strong forest service.



Hon. W. A. CHARTON, M.P.,
President Canadian Forestry Assn.

In Ontario the government and the limit holders together had over one thousand fire rangers in the field during the danger season.

The Province of Quebec had made a beginning in the work of planting denuded sand lands, and had strengthened its protective and development work. The St. Maurice Valley Forest Protective Association had successfully completed its first year's work.

Private efforts in regard to forestry had been greater than ever before, special mention being made of the introduction of oil-burning locomotives by the Canadian Pacific Railway in the Rocky Mountain forest region, and the introduction of telephone systems by a number of limit holders, particularly in Quebec.

The Association again pressed for the establishment of a federal laboratory to test the different woods of Canada.

Progress was noted in forestry education and the establishment of schools to train experienced and working fire rangers to give them greater efficiency in their work was urged.

Fitting reference was made to the loss to the cause of forestry through the deaths of Sir Edward Clouston, Senator Rolland and Mr. R. W. Shepherd of Montreal, Mr. H. F. McLachlin of Arnprior, and Mr. Otis Staples of Wycliffe, B.C.

The need of extending Civil Service regulations to the outside forest service had been pressed upon the governments, and the outlook in this matter was declared to be hopeful.

The membership of the Association had continued to steadily increase and stood at 2,865. The Treasurer reported that after the expenses of the year there was a substantial balance on hand. Of the income \$2,249 was from members' fees. The Dominion Government and the Governments of Ontario, Quebec and British Columbia had continued their grants, and several of the leading banks of Canada had taken an active interest in the work of the Association.

TREASURER'S REPORT.

In bringing in the Treasurer's report the Secretary pointed out that while the expenditures had been the largest in the history of the Association, the income had been fortunately proportionately large. He also pointed out that the total had been considerably swelled by the handling of the payments for the Quebec Convention. This was also true of the grants in aid of the Victoria Convention which amounted to nearly \$2,000, and which had been immediately paid out at the conclusion of that gathering. The balance to some seemed unduly large, but this would be required for new work to be undertaken during the year.

TREASURER'S REPORT FOR 1912.

The report of the Treasurer, Miss M. Robinson, which was duly certified by Messrs. F. Hawkins and T. E. Clendinnen the auditors, was as follows:—

Receipts.

Balance from 1911	\$1,494 51
Membership fees	2,249 70
Copies of <i>Forestry Journal</i>	25 00
Advertising in <i>Journal</i>	122 57
Grant for Quebec Convention, 1911	2,386 50
Grant from Dominion Govt.	2,000 00
Grant from Ontario Govt.	300 00
Grant from B. C. Govt.	200 00
Grant from B.C. Govt.—Convention	1,500 00
Grant from Quebec Govt., 1912..	200 00
Grant from Quebec Govt., 1913..	200 00
Grant from Traders' Bank.	25 00
Subscriptions to B. C. Conv'n.—	
B. C. Lumber and Shingle Mfrs.' Assn.	250 00
B. C. Mills, T. & T. Co.	240 00
	490 00
Refund of Secretary's expenses.	6 00
Interest	60 33
Total	\$11,259 61

Expenditure.

Salaries and clerical work.	\$2,304 20
Quebec Convention	530 52
Ottawa Convention	919 65
Victoria Convention	1,454 24
Secretary's expenses	200 00
Annual report	329 65
Printing and supplies	102 76
<i>Forestry Journal</i>	1,076 09
Lantern and lectures	16 80
Addressing machine	20 00
Empress Hotel, Victoria, banquet	1,990 00
Postage	71 00
Commission on cheques	10 33
Balance	2,234 37

Total

\$11,259 61

Ottawa, Dec. 31, 1912.

SECRETARY'S REPORT.

The report of the Secretary dealt wholly with the field of work, suggesting certain improvements as to how it might be covered. This included editorial, lecture work, clerical work, etc. Regret was expressed that owing to increasing pressure of other duties the Assistant Secretary and Editor, Mr. F. W. H. Jacombe, had decided that he could



MR. WM. POWER, M.P.,
Vice-Pres. Canadian Forestry Assn.

no longer continue in those offices, and suggestions were made as to how this work might be handled temporarily. The advisability of securing assistance to carry out the Winnipeg Convention was also suggested.

These reports were duly received and dealt with.

LOG RULE AND FIRE LEGISLATION.

Dr. B. E. Fernow (the chairman in each case presented the reports of the committees on uniform log rule and forest fire legislation.

In regard to the first, the desirability and difficulty of introducing a uniform log rule to take the place of the five different log rules in use in Canada were set out. The need of a uniform unit of measurement for forestry purposes, *i.e.*, for the purpose of studying rate and amount of production of wood material, was stated. For this purpose nothing was so good as the cubic foot or cubic meter. The only way to bring this about would be to approach the several provinces to see if by conference of those interested one rule might be adopted. No effort to this end had been made by the committee. When such a change was contemplated, however, it would be well to press at once for the adoption of the cubic foot or the cubic meter as the standard measure.

The report on fire protection showed that gratifying progress had been made during the year. Particular attention was drawn to the issue of a most comprehensive order (No. 16570) by the Board of Railway Commissioners of Canada regarding fire protection along railway lines. This action was taken after a number of public hearings in which the different bodies interested in forest protection, including the Canadian Forestry Association, were represented. The chairman of the committee (Dr. Fernow) had been asked to formulate the plans on which the order was based. As a result of this Mr. Clyde Leavitt, Forester for the Commission of Conservation, had been made Chief Fire Inspector for the Board of Railway Commissioners, and had organized the work so that all the railways in the western half of Canada were patrolled in 1912, and it was expected that the railways in eastern Canada would be patrolled in 1913. A specially good feature of the organization was that it linked up the work of the Railway Commission with that of the Dominion and Provincial Governments, the forest protective officers of these governments being made local inspectors of the parts of the railway lines coming within their jurisdiction. It was stated that this legislation was the most advanced of its kind on the continent, covering under one authority 24,000 miles of railway lines. The report also referred to experiments made in brush disposal, particularly by lopping the tops, and also to the extension of telephone lines both under the Dominion Forestry Branch and on private limits in eastern Canada. Gratification was also expressed at the formation of the St. Maurice Forest Protective Association as indicating the most hopeful line of work yet inaugurated, and one which the committee hoped would be widely imitated.

On motion of Dr. Fernow, seconded by Mr. Piche, the reports of the Committees on Uniform Log Rules, and on Forest Fire Legislation were received, the committees continued and allowed to amend their reports before printing.

RESOLUTIONS.

Moved by Hon. Hewitt Bostock, seconded by Hon. Sydney A. Fisher, and

Resolved, that in reference to the notice of motion given by Mr. Southworth this Association, while thoroughly appreciating that the aim of Mr. Southworth is wholly to secure the advancement of the cause of forestry through the widest publicity, still believes that the newspaper publicity which Mr. Southworth desires can be fully secured while carrying on the *Canadian Forestry Journal*, and hereby instructs the Directors and the Editorial Committee to endeavor to develop this bulletin work and at the same time to make the *Journal* as effective as the

means at the disposal of the Association allow.

Moved by Mr. Ellwood Wilson, seconded by Mr. G. Y. Chown, and

Resolved, that the Association regrets the necessity (caused by increased pressure of other duties) of the decision of the Assistant Secretary and Editor that he can no longer continue that work; and it desires to record its appreciation of his faithful and painstaking labors, in the past five years, by granting him an honorarium of fifty dollars.

Moved by Mr. Wm. Power, seconded by Mr. Hiram Robinson, and

Resolved, that the Association desires to express its regret at the illness which prevents the attendance of Mr. William Little, Director and Past President, and to voice the hope that he will be speedily restored to his wonted health and long spared to advance the cause which he has so deeply at heart and for which he has done so much.

Moved by Mr. Ellwood Wilson, seconded by Mr. A. H. D. Ross, and

Resolved, that the Association desires to express its appreciation of the care, energy and liberality with which the retiring President, Mr. John Hendry, fulfilled the duties of that post in the past year. Because of the desire to make the Victoria Convention in every way successful he returned from Europe much earlier than he had intended, and though in poor health threw himself into the arrangement of details with the greatest energy. The Association desires to express the hope that Mr. Hendry's full recovery to health will be speedily accomplished and that he will be long spared to throw his great weight as one of Canada's leading captains of industry into the cause of forest conservation.

Moved by Mr. A. H. D. Ross, seconded by Mr. Ellwood Wilson, and

Resolved, that the thanks of the Canadian Forestry Association be tendered to the Dominion Government and the Governments of Ontario, Quebec, British Columbia and New Brunswick for their grants in aid of the work of this Association.

Moved by Hon. Sydney Fisher, seconded by Hon. H. Bostock, and

Resolved, that the Canadian Forestry Association desires to convey its thanks to His Royal Highness the Governor General for his kindness in continuing as Patron of the Association; it desires to assure him of the anxious concern with which the members have followed the reports of the illness of Her Royal Highness the Duchess of Connaught and of their earnest hope that she may speedily be restored to her wonted health.

Moved by Mr. Piché, seconded by Dr. Fernow, and

Resolved, that the Association send a contribution of twenty-five dollars to each of the two committees formed to erect a monument to the memory of Gayer and Broillard, the two celebrated foresters.

Moved by Mr. E. Wilson, seconded by Mr. W. G. Power, and

Resolved, that a committee be appointed to consider means for the increase of the membership and the formation of local associations.

Upon motion the committee was composed of Mr. E. Wilson (convener), and Messrs. R. H. Campbell, Zavitz, Piché, MacMillan, R. B. Miller and F. C. Whitman.

Moved by Mr. E. Wilson, seconded by Dr. Fernow, and

Resolved, that a committee be appointed to examine the question of the progress in the several provinces of the exploration or classification of lands and to report on ways and means for the furthering of this movement.

Upon motion the committee was composed of Mr. E. Wilson (convener), Hon. Sydney Fisher and Mr. George Y. Chown.

Moved by Mr. R. H. Campbell, seconded by Mr. A. H. D. Ross, and

Resolved, that the thanks of the Canadian Forestry Association be conveyed to the general managers of the chartered banks of Canada which have assisted the Association by making their branch managers members of the Association, or by direct grants in aid of its work.

On motion of Mr. Chown, the Secretary was re-elected and the other elections referred to the Directors.

Moved by Mr. Piché, seconded by Mr. W. G. Power, and

Resolved, that this meeting recommend to the Directors that the salary of the Secretary be increased by the amount of three hundred dollars per year.

Moved by Dr. Fernow, seconded by Mr. E. Wilson, and

Resolved, that the Directors be instructed to arrange for the nomination of a slate of officers through a Nominating Committee which is to report the slate to the annual meeting.

Moved by Dr. Fernow, seconded by Mr. Wilson, and

Resolved, that a special vote of thanks be transmitted to the Treasurer, Miss M. Robinson, for her excellent services, in recognition of the same that a *douceur* of one hundred dollars be paid her in addition to the customary honorarium, and that she be requested to continue in office.

OFFICERS ELECTED.

Patron—H.R.H. the Governor General.
Hon. President—Rt. Hon. R. L. Bordon.
Hon. Past President—Rt. Hon. Sir Wilfrid Laurier.

President—Hon. W. A. Charton, M.P.
Vice-President—Wm. Power, M.P.
Treasurer—Miss M. Robinson.
Secretary—James Lawler.

Board of Directors—Wm. Little, Hiram Robinson, Aubrey White, E. Stewart, H. M. Price, W. B. Snowball, Thomas Southworth, Hon. W. C. Edwards, Geo. Y. Chown, John Hendry, Hon. Sydney Fisher, R. H. Campbell, J. B. Miller, Gordon C. Edwards, Dr. B. E. Fernow, Ellwood Wilson, Senator Bostock, F. C. Whitman, G. C. Piché, Alex. MacLaurin, Mgr. Mathieu, Bishop of Regina, A. P. Stevenson, Wm. Pearce, C. E. E. Ussher, Denis Murphy, C. Jackson Booth, Wm. Price, J. W. Harkom, A. S. Goodeve, W. C. J. Hall, J. S. Dennis, J. B. White, E. J. Zavitz, Geo. Chahoon, Jr., R. D. Prettie.

DIRECTORS' MEETING.

After the annual meeting a meeting of the Directors was held in the same place when officers were appointed or elected as required by the constitution.

Territorial Vice-Presidents—Ont., Hon. W. H. Hearst; Que., Hon. Jules Allard; N.B., Hon. J. K. Flemming; N.S., Hon. O. T. Daniels; Man., Hon. R. P. Roblin; P.E.I., Hon. J. A. Matheson; Sask., His Honor G. W. Brown; Alta., Hon. A. L. Sifton; B.C., Hon. W. R. Ross; Yukon, Geo. Black, Commissioner; Mackenzie, F. D. Wilson; Keewatin, His Honor D. C. Cameron; Ungava, His Grace, Mgr. Bruchesi, Archbishop of Montreal.

Editorial Committee—R. H. Campbell, Thos. Southworth, Avila Bedard, J. M. Macoun, Ellwood Wilson, E. J. Zavitz, F. W. H. Jacombe.

Editor, James Lawler; Associate Editor, G. C. Piché.

A number of other routine matters were dealt with by resolution, the Secretary was authorized to proceed with the arrangements for the Winnipeg Convention in the latter part of July, 1913, and questions affecting

office accommodation, assistance, etc., were referred to a committee composed of the Directors resident in Ottawa.

THOSE PRESENT AT ANNUAL MEETING.

Hon. H. Bostock, Monte Creek, B.C.
Horace Boulton, Canada Lumberman, Toronto.
Hon. W. A. Charlton, Geo. Y. Chown, R. H. Campbell, Dominion Director of Forestry; A. C. Campbell, D. R. Cameron, Dominion Forestry Branch, Kamloops.
T. W. Dwight, Dominion Forestry Branch, Ottawa.
L. N. Ellis, C.P.R. Forestry Department, Calgary, Alta.
Hon. Sydney Fisher, Dr. B. E. Fernow, Dean of the Faculty of Forestry, University of Toronto.
Frank Hawkins, Secretary Canadian Lumbermen's Association.
F. W. H. Jacombe, Forestry Branch, Ottawa.
Clyde Leavitt, Forester, Commission of Conservation; R. G. Lewis, Forestry Branch, Ottawa.
Douglas Malloch, American Lumberman; B. R. Morton, Forestry Branch, Ottawa.
Wm. Power, M.P., Quebec; W. Gerard Power, Manager River Ouelle Lumber Co., St. Pacomé, Que.; G. C. Piché, Chief of Quebec Forest Service.
Hiram Robinson, President Hawkesbury Lumber Co., Ottawa; A. H. D. Ross, Lecturer, Faculty of Forestry, University of Toronto.
Ellwood Wilson, Forester, Laurentide Co., Grand Mere, Que., F. Page Wilson, Editor Pulp and Paper Magazine, Toronto; J. B. White, Woods Manager, Riordon Co., Calumet, Que.; H. C. Wallin, Forestry Branch, Ottawa.
E. J. Zavitz, Ontario Provincial Forester, Guelph, Ont.

Canadian Lumbermen's Association.

The Fifth Annual Meeting of the Canadian Lumbermen's Association was held in the Chateau Laurier, Ottawa, on Feb. 4, 1913, and was the most successful annual meeting yet held. There was a large and representative attendance.

In the unavoidable absence of the President, Mr. Alexander MacLaurin of Montreal, who was kept away by reason of ill health, the chair was taken by Mr. J. C. Browne of Ottawa, Vice-President.

There was a large amount of important business relating to the different aspects of

lumbering at the two business sessions in the morning and afternoon.

The following officers were elected:—

President, Alexander MacLaurin, Montreal; Vice-Presidents, J. C. Browne, Ottawa, J. S. Gillies, Braeside, Ont., His Honor D. C. Cameron, Winnipeg, and John Hendry, Vancouver; Executive Committee, Alex. MacLaurin, Montreal, J. C. Browne, Ottawa, Gordon C. Edwards, Ottawa, J. S. Gillies, Braeside, and J. J. McFadden, Renfrew; Directors, W. Power, M.P., Quebec; E. H. Lemay, Montreal, Arthur H. Campbell,

Montreal, D. L. White, Midland, Walter C. Laidlaw, Toronto, J. G. Cane, Toronto, W. A. Firstbrook, Toronto, A. D. McRae, Fraser Mills, B.C., Wm. McNeill, Vancouver, B. C., and the following new members: A. L. Mattes, Prince Albert, Sask., Duncan McLaren, Toronto, C. A. Larkin, Toronto, and J. Hanbury Wycliffe, B.C.

A vote of thanks was passed to the Secretary, Mr. Frank Hawkins, for the valuable work he is doing for the Association.

The proceedings concluded with a banquet at the Chateau Laurier in the evening when over one hundred guests were present. The chair was occupied by Hon. W. C. Edwards. At his right hand was Hon. Geo. H. Perley, who ably represented the Dominion Government in the enforced absence of Rt. Hon. R. L. Borden, the Prime Minister, through press of parliamentary business. Mr. E. M. Macdonald, M.P. for Pietou, N.S., took the place of Sir Wilfrid Laurier, who was indisposed.

There were a number of excellent speeches, but the one which had the most particular reference to forestry was that by Hon. Geo. H. Perley. As it well known Mr. Perley is a member of a family that has been largely interested in lumbering in the Ottawa Valley for many years. He has always been a warm friend of the cause of forestry, and though his public duties have made it necessary for him to sever in a measure his active connection with the lumber business, this has not lessened his desire to assist in the perpetuation of the great industry and of the forests upon which it is dependent.

On this occasion Mr. Perley pointed out that it was clearly evident that a large part of Canada should be kept permanently under timber. The land was not suited for anything else, and it was a mistake to allow settlement in such a district. Lands should be classified and a sharp line drawn around those suited for forests and unsuited for agriculture, and no settlement should be permitted therein. This proper disposal of the land affected every citizen, but it particularly affected the lumberman. The lumberman should therefore, he held, be foremost in the work of teaching this to the people at large—that it was for the national wellbeing that forest lands be devoted to forests and not ruined in an attempt to farm them. Canada was a democratic country. The decision in any of these public matters depended upon the people, the voters needed to be taught and those interested in forest products should enlighten their neighbors.

Mr. Perley's speech was brightened by a number of very apt anecdotes drawn from his experience as a young man in the lumber woods. He referred to the hopeful and healthful character of the lumberman's life, and recalled to all present the waste of money and human life that all had seen in

the attempt to grow oats and potatoes where Providence had intended that nothing but pine and spruce should ever grow.

This part of Mr. Perley's speech was one of the best statements of the necessity for and advantages of forest conservation to a country like Canada that could be made. Coming from an experienced and successful lumberman speaking to leaders in Canada lumbering, the statement had very great weight, which was not lessened by the fact that Mr. Perley has now upon his shoulders additional responsibilities as a member of the Cabinet of the Government of Canada.

Senator Edwards, as usual, filled the chair with tact and ability, and in proposing the health of Hon. J. G. Foster, United States Consul, spoke of the place that gentleman had made for himself in the hearts of Canadians, and suggested that if there was any danger that the change in the government at Washington would result in Mr. Foster's retirement, that prominent Canadians should start a petition to be forwarded to Washington praying that Mr. Foster be allowed to remain in his present office at Ottawa.

Mr. Foster made a fitting and feeling reply.

The toast to the health of Mr. John R. Booth, 'the grand old man of the Ottawa lumber industry,' was received with cheers.

Mr. Douglas Malloch, 'The Lumberman Poet' of the American Lumberman, Chicago, in replying to the toast to the Press, made a very witty speech concluding with the recitation of one of his happiest poems, 'Isn't it Fine To-day.'

As most of the members of the Canadian Lumbermen's Association are also members of the Canadian Forestry Association a good many of those present on Feb. 4 remained to the next day to attend the Annual Meeting of the Canadian Forestry Association.

The City of Philadelphia has just had a thorough report made on the condition of shade trees in the city. This showed that fully fifty thousand trees are in danger of destruction, and a recommendation was made that fifty thousand dollars be appropriated for the purpose of protecting the trees by pruning and by combating destructive insects.

It is announced that the City of Ottawa and the Ottawa Improvement Commission will co-operate this year in a vigorous and systematic fight against the caterpillars which last year did so much damage to the shade trees of the city. The State of Massachusetts has spent hundreds of thousands of dollars in fighting the pests which are attacking its trees, and Canada must be on the alert or she will be placed in the same predicament.

The Problem of Forestry.

By Henry S. Graves, Chief Forester of the United States.

When this country was first settled there was a forest unequalled anywhere in the world. It stretched in an almost unbroken mass from the Atlantic Ocean half across the continent; there was an extensive forest on the higher ranges of the Rocky Mountains, and on the Pacific coast a broad band of forest of unparalleled development. The original forests were remarkable not only for their vast extent, but also for the great number of valuable species composing them, and their enormous yield in useful material. The forest contained trees of great size and age. Nature working through centuries had provided a vast storehouse of timber fully grown and ready for use when required. It is upon this supply that the American people have been drawing for four centuries. It has constituted a source of great wealth and has been an important element in the internal development of the country and in the extension of its commerce.

When the country was first settled the effort was to remove the forest for agriculture. With the increase of population there naturally arose a demand for products and the timber was cut for use and not merely destroyed. The first lumbering for use took only the choicest trees in the forest. As trees were selected here and there, but little damage was done to the forest. As the demand for timber increased the forests near settlements and accessible for transportation were cut through again. The process went on until the modern methods of lumbering were introduced, which make very heavy inroads into the forest, often removing every tree.

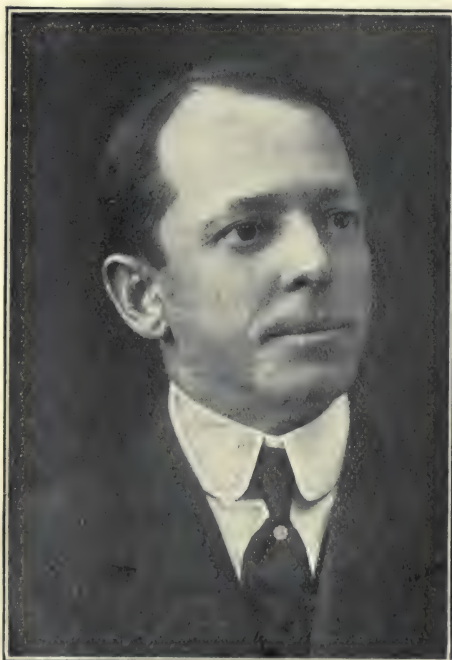
As the country developed, forest fires became an increasing menace to the forest. The majority of the lumbered lands were burned over and usually at the same time immense areas of uncut timber. As long as there were still vast areas of virgin forest, but little thought was given to the loss by fires. But as in one state after another the original forest was cut away or burned away, people began to realize that a halt must be called, and that very vigorously.

Investigations have shown that since 1870 an average of over 50,000,000 acres were being burned over every year, with an annual loss of from 50 to 100 millions of dollars.

Use of wood and future supplies.

The United States is essentially a wood-using nation. Lumber has been so plentiful and cheap that we use wood for many pur-

poses for which other nations use other material. Our per capita consumption of wood is seven times that of Germany. Forty eight thousand sawmills are at work supplying this material. There would be no need of anxiety about our extravagant use of timber if there were an adequate supply. We are drawing on our capital, and through failure to practice forestry our forests are not producing by new growth within one third of what we actually use, let alone



MR. H. S. GRAVES.

the amount lost by fire and by waste. In other words, we are actually using up our forest supplies, and that very rapidly.

There is often an impression that there is a great supply in Canada and in the West which may be drawn upon after we have used up our eastern supplies. No greater mistake could be made. The forests of Canada are far from inexhaustible. The Canadians are wasting their resources as fast as this country is, and they will need their forests to meet their own future requirements. There is also a belief that the Western mountains are covered with a solid

mass of unbroken virgin forests. This is far from truth. The western forests have suffered from fires from time immemorial. Not only are there everywhere great areas burned by recent fires, but there is scarcely a forest in which there are not evidences of ancient fires. The forests are frequently broken, the trees scarred and defective, and the yield deficient because of old fire-injuries. Immense stretches are bare or covered with an immature growth where formerly some fire swept off the forest.

We can not count on meeting our needs by imports from other countries, nor can the East count on meeting its full needs from the West. The country should be self-supporting in forest products, and each region should have a home supply which will meet its principal needs. We must stop our waste, reduce our extravagance in use, and increase our production by growth by fully 300 to 500 per cent.

Forests and Streams.

For many years foresters and others have given warning that the forest problem reaches further than the supply of timber and other products. There is an exceedingly intimate relation between the conservation of forests and the conservation of water. The forest is the best natural regulator of the run-off water. Any system of water conservation must, therefore, include a proper protection of the forest cover at the head-waters of rivers.

The general public does not appreciate the results which will follow the destruction of the cover of the mountains, because in most instances the process has not yet proceeded to a point to make its effects felt. Complaints are common from manufacturers and other users that the streams are becoming less regular as the forests are cut. Many measurements conclusively show that there is such an increasing irregularity, but the fact is that the mountains in most sections have as yet not been so denuded as to cause the worst results that might be feared. This is particularly so in the East. Thus in the South the forests may be cleared by cutting or fire and a new growth quickly springs up. Until the cover is re-established there is without doubt an effect on the run-off, but it is only a temporary effect. The conditions gradually re-establish themselves. But let the forests be continually denuded on the steep slopes; there will be a gradual change in the physiographic conditions. The beds of the streams will begin to be slightly deeper, there will be new channels formed where during storms the surface water runs off rapidly in a flood. After a time there is a swift change — the result perhaps of some exceptional storm — when the equilibrium of stream conditions is upset. There is a permanent change of conditions of run-off. The channels are all deepened, and torrent conditions exist. From

then on, every storm produces a flood of greater or less proportions. It is this point of permanent change of stream conditions which we most fear, and which will occur when forests are continually denuded. It has already occurred in many places in the West, where the recuperative power of vegetation is less vigorous than in the humid region. It has occurred widely in the Alps of Europe. When such torrent conditions are established, the mere restoration of the trees will not cure the evil. It is an engineering problem to control the water by artificial means, and as already proven in Europe this is a task of great magnitude and vast expense.

What the U. S. Government is doing.

What, then, is being done to protect the national forests so that they may perform their functions as water regulators and provide timber for the people's use? How far is forestry actually in practice?

The chief work so far is being done by the Government. A forest policy has been initiated. Nearly 200,000,000 acres of land have been set aside as forest reserves. Most of this lies in the high mountains. Much of it is as yet undeveloped and wild country, with few trails or roads. In the past fires burned so frequently in the mountains that there was a regular fire season when the forests were ablaze and the air full of smoke. When the National Forests were put under administration these fires were reduced at once, and for the last five years the loss on the National Forests has been exceedingly small. It seemed to the public as if the fire problem on the public lands was under way of solution. Those in charge of the forests realized, however, that a vast wilderness cannot be organized for perfect fire protection in a few years, because the fundamental first necessity to protect a forest is to open it up so that all parts are available for patrol and for moving men and equipment to fight fires. Nevertheless, the Forest Service, even with only a pitifully small protective force, has been able to hold down the fires to a minimum during the years of normal rainfall.

During 1910 there was exceptional drought, especially in the Northwest. The forests became exceptionally dry. Not only the surface layer of leaves, but even the humus in the usually damp woods, became excessively inflammable. In the north-western forests the situation became critical as early as June. The early spring had been unusually dry, and then the summer rains failed. By July fires were springing up in great numbers, and in August the forests of the entire northern Rocky Mountains were threatened by fire. The climax was reached toward the end of August. Hundreds of fires had already been put out, but new ones continued to be started from various causes. Locomotive sparks, brush

burning, careless campers, lightning, incendiarism, all contributed. The great fires of Idaho occurred August 20. There were then many fires burning in the mountains. Nearly all were under control, that is, they were trenched, and a force of men were guarding them and preventing their spread.

With reasonably calm weather, all would have been extinguished before long, but suddenly a terrific hurricane arose, which lasted practically a day. So strong was it that men were unseated from their saddles. Whole areas of forest were absolutely flattened. Men were killed by falling trees in front of the fires. Every smouldering fire was fanned into a conflagration. Sparks were blown miles ahead of the fires. The flames rushed through the crowns of the trees with a fury which was appalling. Within a day there was a fire a hundred miles long. Seventy six fire fighters had been killed, and, if it had not been for the skill and nerve of the rangers, many more would have been lost. For a few days all work was devoted to rescue, and then the fight on the fires was resumed. It was a noble fight and the nation should be proud of the forest officers who toiled day and night, again and again risking their lives to save the forests and the towns which were imperilled.

This is the first instance of an organized attempt to fight such great fires. It cost a million dollars, but there was saved property aggregating certainly over one hundred million, if not two or three times that.

The experience clearly demonstrated the fact that fires can be controlled when the forests are properly developed and manned by an adequate force of men, for where these conditions existed the fires were subdued promptly and with little loss. The great and disastrous fires occurred where the forests were without means of transportation and communication and without adequate patrol. The lesson is also taught that money must be spent by the government on construction of roads, trails, telephone lines, and other equipment of the forests; and there must be more men for patrol. It will take time to develop this vast wilderness for full protection, but the work should progress faster than in the past. European forests are safe because of this kind of development. It has taken many years to perfect the organization. We can make our forests equally safe, but it will require large expenditures for development in improvement. This I believe the people should be willing to expend.

Forestry on Other Lands.

But the government owns only a small portion of the total forest area of the country, and very little in the East. Most of the forests now furnishing the lumber used in the country are privately owned. The

government forests are as yet not being cut to a large extent. They are the most remote, and in many cases the least valuable forests. They have not yet been reached for the market. Four fifths of the merchantable timber is in private ownership. A few owners are practicing forestry, but only a few of the larger holdings are handled with a view to the continuous production of timber. It is probable that less than two per cent of the lumber on the market today has been put under the principles of forestry.

We have, then, the great task not only to perfect the management of the national forests, but to introduce forestry on the lands not publicly owned. To accomplish this requires the combined efforts of the government, the states and private owners. A number of states have purchased land for forest reserves. But in the aggregate the area is small. These reserves should be greatly extended. On private lands the first task is fire protection. Private owners now hesitate to invest money in forestry because of the fire risk and because also they fear that the possible profits will be eaten up in the taxes now imposed on growing timber. They should be helped in removing these obstacles to forestry. The states have a duty to introduce a system of taxation which will not prevent forestry. The states have the duty to directly aid private owners in fire protection. There should be a thoroughly organized fire-protective service supported by the states. This will involve a considerable annual outlay and the burden will be on the public. But the benefits from forestry are chiefly derived by the public. The single individual is unwilling and often unable to invest money primarily to secure a general public benefit. I regard this as the first duty of the states in forestry. It is certain that forest laws, no matter how perfect in themselves, will not be effective unless they carry ample appropriations to enable organized practical forestry.

The country has accepted the principles of forestry. It now demands practical results. We can produce the results if the country will meet the necessary cost. Prussia spends \$2 an acre on its public forests. We spend 2 cents an acre on ours. It is not unreasonable to expect an increased national expenditure. Many of our states spend nothing on forestry. If those forests outside the public domain are to be protected and the public is to receive the benefits derived from such protection, the states must assume their responsibilities and carry their share of the burden.—*The Bulletin of the Geographical Society of Philadelphia.*

[While Mr. Graves's remarks apply particularly to the United States, there is also much food for reflection for Canadians.—Ed.]

IN ALGONQUIN PARK.

C. W. Young, President of the Canadian Press Association.

There's days when the fish won't bite;
It's either too calm, or else too rough;
It's either too warm, or not warm enough;
It's either too cloudy, or the sun's too
bright;
The wind's the wrong way, or the moon's
not right;
It's either too wet, or else it's too dry;
Or for some other reason, you can't tell
why,
But there's days when the fish won't bite.

There's days when the fish won't bite;
You may try every lure, you may try every
bait,
You may do what you will, and wait and
wait
From morning till noon, and from noon till
night,
But you won't get a nibble tho' you try all
your might;
You may grumble or swear,
But the fish don't care,
For there's days when the fish won't bite.

But there's days when the fish will bite;
When it ain't too calm, and it ain't too
rough,
When it ain't too warm, but just warm
enough;
And the big old fellows, oh, joy, how they
fight!
Your rod's bent double as you keep your
line tight.
How they leap! How they run!
Gee whiz, but it's fun!
On the days when the fish will bite!

At the close of the big game season in New Brunswick, Lt.-Col. Loggie, Deputy Surveyor-General, announced that the receipts from game licenses for the past fiscal year had amounted to over \$51,000, thus making a new record for receipts from this source. The preceding year the receipts were \$43,000.

It is to be noted that in the annual reports of the general managers of the leading chartered banks of Canada specific mention is made of the condition of our forest industries. Careful reading of these will show that these financial leaders expect our forest industries to continue indefinitely. There is no reason why they should not, and in fact no reason why they should not be greatly increased in the time to come if we only handle our forest lands in a rational manner. To have this done is the reason for the existence of the Canadian Forestry Association.



MR. E. J. ZAVITZ.

RAILWAY FIRE PROTECTION.

Mr. E. J. Zavitz, Provincial Forester for Ontario, has been appointed Provincial Fire Inspector by the Board of Railway Commissioners, and subject to the general supervision of the Chief Fire Inspector will direct the enforcement in Ontario of the railway fire regulations of the Board. Similar action as to Quebec has been taken by the appointment as Provincial Fire Inspector of Mr. W. C. J. Hall, Chief of the Forest Protection Branch, Department of Lands and Forests, Quebec. It is anticipated that co-operation with the Railway Commission will be extended to the provinces of New Brunswick and Nova Scotia through action by the respective Provincial Governments.

— *Conservation.*

A committee of the British Board of Agriculture recently held an enquiry as to the relative value of forests and sheep grazing in regard to the support of population. The result of the inquiry was that whereas it took twenty-five hundred acres of rough broken land to support one shepherd and his family, the same amount of the same kind of land would support twenty-five woodsmen and their families. The object of the inquiry was to show which was the better industry to foster in a country where land values are high and the population dense. The result is worthy of note by all interested in forestry.

Constitution and By-laws, Canadian Forestry Assn.

Corrected to Feb. 5, 1913.

I. NAME.

The name of the Association shall be:
The Canadian Forestry Association.

II. OBJECT.

Its objects shall be:—

(1) To advocate and encourage judicious methods in dealing with our forests and woodlands.

(2) To awaken public interest to the sad results attending the wholesale destruction of forests (as shown by the experience of older countries) in the deterioration of the climate, diminution of fertility, drying up of rivers and streams, etc., etc.

(3) To consider and recommend the exploration, as far as practicable, of our public domain and its division into agricultural, timber and mineral lands, with a view of directing immigration and the pursuits of our pioneers into channels best suited to advance their interests and the public welfare. With this accomplished, a portion of the unappropriated lands of the country could be permanently reserved for the growth of timber.

(4) To encourage afforestation wherever advisable, and to promote forest tree-planting, especially in the treeless areas of our north-western prairies, upon farm lands where the proportion of woodland is too low, and upon highways and in the parks of our villages, towns and cities.

(5) To collect and disseminate, for the benefit of the public, reports and information bearing on the forestry problem in general, and especially with respect both to the wooded and prairie districts of Canada, and to teach the rising generation the value of the forest with a view of enlisting their efforts in its preservation.

(6) To secure such forestry legislation from time to time from the federal and provincial governments as the general interests demand, and the particular needs of the people seem to require.

III. MEMBERSHIP.

Its membership shall include all who pay an annual fee of \$1.00 or a life membership fee of \$10.00.

IV. OFFICERS.

(1) The officers shall comprise an honorary President, a President, a Vice-President, a Secretary, an Assistant Secretary, a Treasurer, the editor of the official organ of the Association and thirty directors.

(2) In addition to the above all past presidents of the Association, from (and including) the Association year 1909-1910, shall be *ex-officio* members of the Board of Directors.

V. ELECTIONS.

These officers shall be elected by ballot at the annual meeting of the Association, and shall serve one year, or until their successors are elected. Vacancies occurring during the year may be filled by the Executive Committee.

VI. EXECUTIVE COMMITTEE.

The officers shall constitute an Executive Committee, and five of the same shall be a quorum, and they will appoint a Vice-President for each province and as far as possible for each provisional district of the Dominion.

VII. ANNUAL MEETING.

The annual meeting of the Association shall be held during the month of February in the City of Ottawa, unless otherwise determined by the Executive Committee of the Association and a notice of one month of the date selected shall be given to each member by the Secretary.

VIII. SPECIAL MEETINGS.

Special meetings shall be held at such times and places as the Executive may decide, a sufficient notice of which shall be sent to each member by the Secretary.

IX. AMENDMENTS.

Amendments of the Constitution can only be adopted by a two-thirds vote of the members present and entitled to vote, and at the annual meeting of the Association, and a notice of such intended amendment shall be given with the notice calling the meeting.

BY-LAWS.

President.

The President shall preside at all meetings of the Associations.

Vice-President.

In the absence of the President, a Vice-President shall preside at all meetings of the Association; and in the absence of all of them a President *pro tempore* shall be elected by the meeting.

Secretary and Assistant Secretary.

The Secretary shall keep a record of the proceedings of the Association and of the Executive Committee, and shall be custodian of all documents, books and collections ordered to be preserved.

He shall conduct the correspondence of the Association and shall keep a list of members with their residences, and shall notify members of the time and place of meeting of the Association, and in his absence his duties will be discharged by the Assistant Secretary.

Treasurer.

The Treasurer shall have the custody of all moneys received, and shall deposit or invest the same in such manner as the Executive Committee shall direct, and shall not expend money except under direction or approval of the Executive Committee. The financial year of the Association shall close on December 31st of each year.

Order of Business.

At the regular meeting of the Association the order of business shall be that proposed by the Executive Committee and announced by the Presiding Officer. In the absence

of such prepared order of business, the following shall be observed:—

- (1) Calling to order.
- (2) Reading and referring or disposing of letters, accounts, etc.
- (3) Reports of Committees.
- (4) Inquiries and notices of motion.
- (5) President's address.
- (6) Papers, addresses and discussions by members and others invited by the meeting.
- (7) Nomination and election of officers.
- (8) Unfinished and miscellaneous business.
- (9) Adjournment.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

Forest Engineers' Annual.

The fifth annual meeting of the Canadian Society of Forest Engineers convened at the Carnegie Library, Ottawa, at 3 p.m., on Wednesday, February 5, and also at an adjourned session at the Laurentian Club at 8 p.m. There were present Dr. B. E. Fernow, president, in the chair, Messrs. R. H. Campbell, Ellwood Wilson, D. R. Cameron, T. W. Dwight, L. M. Ellis, A. Knechtel, C. Leavitt, G. C. Piché, A. H. D. Ross, H. C. Wallin, E. J. Zavitz and F. W. H. Jacobbe.

The secretary's report showed forty-two active members, with one honorary and three associate members.

Mr. Thos. Southworth, on signifying his wish to withdraw from active membership through having severed active connection with forestry, was elected an honorary member.

Mr. E. Wilson reported progress for the committee on the standardization of forest maps. On motion the committee was continued, Mr. Wilson being designated convener. Mr. A. H. D. Ross was added to the committee, and, on motion of Mr. Cameron, Mr. Wallin was substituted for the mover on the committee. This committee now consists of the following:—Mr. Wilson, convener, Dr. J. F. Clark, Dr. C. D. Howe and Messrs. Ross, Wallin and Dwight.

Mr. Wilson also reported verbally in regard to the proposed International Society of Foresters and asked that the committee be continued. The request was, on motion, granted.

A motion regarding the qualification for active membership in the society, of which Mr. Wilson had given notice, was passed after amendment. The effect of the motion is that future candidates for active membership must not only be graduates of an

approved forest school, but must also have had two years of practical experience in the practice or teaching of forestry.

The question of appointing advisory committees for the various divisions of the Dominion was introduced and it was resolved that such committees should be appointed, each committee to consist of three members, to be appointed by the Executive committee. Four committees are to be appointed, one for each of the following districts:—(1) Quebec and the Maritime Provinces, (2) Ontario, (3) Manitoba, Saskatchewan and Alberta, and (4) British Columbia.

Mr. Dwight was appointed auditor.

The Executive committee was instructed to look into the question of procuring a charter for the society to work out a more satisfactory method of electing officers and to arrange for a dinner in connection with the next annual meeting.

The thanks of the society are again due to Mr. Campbell for his hospitality in entertaining the members at dinner at the Laurentian Club, a courtesy which was greatly appreciated.

Additions to Membership.

The following have recently been added to the list of active members of the society:

Dominion Forest Service—Messrs. D. R. Cameron, T. W. Dwight, W. N. Millar and H. C. Wallin.

Quebec Forest Service—A. Bedard.

British Columbia Forest Service—F. W. Beard, R. E. Benedict, O. D. Ingall, H. S. Irwin, H. C. Kinghorn, John Lafon, J. B. Mitchell, E. G. McDougall, T. H. Plumer, G. H. Prince, H. K. Robinson and W. J. VanDusen.

Railway Commission—Clyde Leavitt.

University of Toronto—J. H. White.

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Write for catalog of Biltmore Forest School, addressing—

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Candidates for advanced standing may take examinations in any subject but are required in addition to present evidence of a specified amount of work done in the field or laboratory.

The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

For further information address

JAMES W. TOWNLEY, Director
NEW HAVEN - - - CONNECTICUT

Canadian Forestry Journal

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CONTENTS:

	Page.
Winnipeg Convention	33
Editorial Notes	33-34
St. Maurice Forest Protective Association	35-37
Pejepscoot Company and Replanting	37
Genesee Valley Forestry Association	38
Sweet and Slow (poem)	38
N. Y. State Forestry Association	39
Directors' Report	40-42
Sawdust, Utilizing	43-45
Pennsylvania Chestnut Blight	45
With the Forest Engineers	46

THE WINNIPEG CONVENTION.

After consulting a strong local committee on the subject and taking into consideration all the factors in the case it has been decided to hold the Winnipeg Convention on July 7 to 9.

Meetings will be held in the commodious hall of the Winnipeg Industrial Bureau, which is the unique organization for taking charge of conventions in the Prairie Capital. The Government of Manitoba, the City of Winnipeg and the Manitoba Horticultural and Forestry Association will participate in the Convention. The arrangements for the program are now going forward.

This will be an ideal time to visit Winnipeg as the meeting will take place just before the beginning of harvest and during the first two days of the Winnipeg Exhibition, when hotel accommodation will not be so taken up as it will be in the following week.

As there will be a number of different events immediately following

this time in different parts of the Prairie Provinces, it will be possible for those desiring to see the prairies at harvest time to make side trips before returning home.

Railway arrangements have not yet been concluded, but it is expected that they can be announced in the next issue of the Journal. If those who intend to be present would notify the secretary it would greatly facilitate the work of arranging for the convention.

Attention is directed to the article in this issue dealing with the formation of the St. Maurice Valley Forest Protective Association. This is considered by competent authorities to be the most hopeful sign in Canadian Forestry matters at the present time. At the meeting the hope was expressed that the Province of Quebec would soon be covered by similar organizations. In fact this is the view of all who have upon them the responsibility of caring for our forests, and therefore the hope is that like associations may be formed in all parts of Canada where there are forests. There is no doubt that this movement was given an impetus by the address of Mr. E. T. Allen, Secretary of the Western Forestry and Conservation Association, (a similar organization) at the Victoria Convention. We have received the constitution and the annual report of the St. Maurice Valley Forest Protective Association and as soon as possible will publish the substance of these in the *Canadian Forestry Journal*.

A very significant fact is the formation of new organizations to assist in the work of forest protection. Two of these are referred to in this issue,

the New York State Forestry Association and the Genesee Valley Forestry Association. There never was a time when there was so much real interest in forest protection as the present, and we propose to keep our members in touch with the different aspects of the movement from month to month.

On March 24 the daily papers contained reports of a number of rivers in dangerous flood in addition to the terrible floods of the Ohio Valley. Those noticed were the Speed River at Guelph, Ont.; the Grand at Galt, Ont.; the Rideau River, and a number of tributaries of the St. Lawrence in Quebec. On this date the streets in the lowest part of Sault au Re-collet, Que., were being navigated by boats, while the Hintonburgh district of Ottawa was badly inundated. The great Ottawa and St. Lawrence rivers were also rising rapidly and causing apprehension. All this but points the moral of the danger of deforestation.

NUT GROWING.

Mr. W. C. Read of Vincennes, Indiana, in a paper read before the Kentucky State Horticultural Society urges the planting of nut trees throughout the Ohio Valley. He writes of black walnut, hazelnut, butternut, beechnut, the hickories, chestnut and pecan. He lays special stress on chestnut, walnut and pecan. While the chestnut is probably suitable for only the southern most parts of Canada, and while the pecan is perhaps, not suitable for Canada at all there is a considerable area where walnuts can be produced to advantage and to this Mr. Reeds remarks apply. He holds that English walnuts should be budded on native stock which adapts them to a wider range of soils, makes them hardier and causes them to ripen their wood earlier. Such trees have stood temperatures of 18 to 20 degrees below zero in Pennsylvania. Walnut trees require about the same care as apple trees and should be planted not less than 40 feet apart. If planted in orchard form the land may be utilized for growing field crops or may be under cropped with quick growing fruit trees. Mr. Reed claims that there are many thousand acres of land too rough to grow ordinary crops which will give good returns in nuts, and he speaks of \$100 per acre per year as an average return where the trees are given attention.

With this in view he urges the planting of handsome and stately nut bearing trees in place of the millions of useless willows and poplars which yield no financial returns.

THE CAUSE OF THE PEOPLE.

There were a number of important matters at the third annual meeting of the North Carolina Forestry Association. The President of the Association is Mr. E. B. Wright, a leading lumberman, and in his annual address the President remarked: 'The cause of forestry is the cause of the people, and I find ample justification for rejoicing in North Carolina to-day over the crystallization of a healthy public sentiment by all classes of people in favor of a more intelligent and businesslike application of the principles and practice of modern forestry.'

A leading furniture manufacturer said that unless forests were protected they would soon have to make furniture out of something else than lumber. The railway men claimed they were more interested in forests than the timber owners themselves, and the farmers' and the women's clubs were also represented. Among the resolution passed was one recommending further action in co-operation with the Federal Government under the Weeks Law; and protesting against the proposal to turn over the national forests to the various States. The Association believes that the Federal Government can handle the forests better than can the States.

FIGHTING THE BROWN TAIL MOTH.

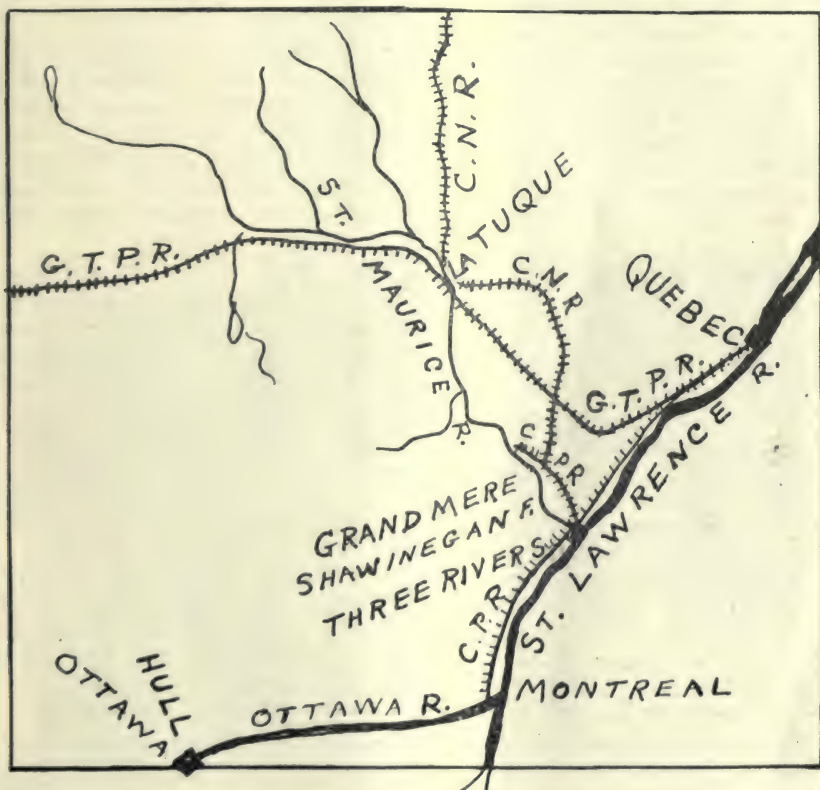
In February a conference was called at Boston by the State Forester of Massachusetts for the purpose of bringing together those now fighting the gipsy and brown-tail moths and those who are likely to be concerned in the near future. New York State was represented at this conference. As shade tree pests these can be destroyed by spraying and destroying egg clusters, but these methods, expensive as they are, cannot be extended to fight such insects in forest trees. Dependence has to be placed in the parasites and diseases of these moths introduced from abroad. As an aid to this work it is proposed to put a barrier between affected and unaffected districts. Trees like the oak, willow and birch are apparently more favorable to the development of these insects, while they are unable to complete their life history on coniferous trees. It is therefore proposed to check the spread of the insects northward into the Adirondacks by having zones of white pines and other evergreens from which broad-leaved trees have been removed. With this is to go a strict quarantine of cordwood, lumber and nursery stock shipped from infested areas.

St. Maurice Valley Forest Protective Association

The most hopeful step taken for many years in Canada.

One of the most significant gatherings ever held in Montreal was the annual meeting of the St. Maurice Forest Protective Association held at the Place Viger Hotel on February 14. This organization, which is just one year old, marks the beginning of a new era in forest protection. Hitherto the matter of protecting the forests has been one between the individual limit holder and the government. In this field the advantages of co-operation are very great, but until the formation of the St. Maurice Association every lumberman battled with the fires on his own limits as best

he could. A year ago the limit holders in this valley seeing the waste and inefficiency of individual effort got together and formed an association. They appointed a general manager who took charge of all the fire rangers and directed them as one army, posting every man where he could be of the greatest advantage. The Association which controls an area one hundred and sixty miles long with an average width of one hundred miles, embracing in all seven million acres, taxed itself one quarter of a cent per acre, and to the \$17,500 thus raised the government of Quebec added \$3,-



Map showing location of St. Maurice Valley, Quebec.

000. With this money there were opened or re-opened 525 miles of pack trails, there were purchased canoes, axes, shovels, tents, and gasoline motors for railway patrol, and a beginning made in erecting telephone lines and in connecting these with existing telephone systems. The result was that 97 incipient fires were promptly extinguished and the association came through the year with practically no loss. This year it is proposed to extend the trails, to connect up the telephone lines and to erect lookout stations from which watchmen may send out warnings to headquarters so that a sufficient force of men may be sent promptly to put out the fire. The officers for the first year were: President, Mr. Alexander MacLaurin, of Montreal; Vice-President, Mr. W. R. Brown, of Berlin, N.H., and La Tuque, Que.; Manager, Mr. H. Sorgius, of Three Rivers. Owing to the illness of Mr. MacLaurin which has necessitated a trip to the south, and the occupation of Mr. Brown with other features, these gentlemen (though both are enthusiastic over the work) retired and the new officers elected were: President, Joseph Dalton, Three Rivers; Vice-President, S. L. de Carteret, La Tuque; Manager and Secretary, H. Sorgius, Three Rivers.

One of the successful features of the gathering was the banquet at the Place Viger Hotel when about twenty-five gentlemen, members of the Association or interested in the work, discussed an excellent menu and afterwards listened to a few pithy speeches dealing with the subject in hand. The toastmaster was Mr. Ellwood Wilson of Grand Mere, and at the table were Hon. Jules Allard, Minister of Lands and Forests, Quebec; and Messrs. W. R. Brown; R. H. Campbell, Dominion Director of Forestry; Joseph Dalton; Lt. Col. Hibbard, Member of the Quebec Utilities Commission; E. J. Zavitz, Guelph, Forester for the Ontario Government; Clyde Leavitt, Chief Fire Inspector of the Dominion Rail-

way Commission; W. C. J. Hall, Chief of the Forest Protective Service, Quebec; Wm. Power, M.P., Quebec; J. F. Grant, William Ritchie and Frank Ritchie, Three Rivers; L. K. MacLaurin, Montreal; B. M. Winegar, C.P.R. Natural Resources Dept., Montreal; Gustave C. Piché, Chief of the Quebec Forest Service; Geo. Dansereau, Montreal; James Lawler, Secretary of the Canadian Forestry Association, Ottawa; L. N. Ellis, C.P.R. Forestry Dept., Calgary; H. E. Brinkerhoff, St. Jovite, Que.; D. B. Brown, La Tuque; M. C. Small, Grand Mere; and H. Sorgius, Three Rivers.

Hon. Mr. Allard referred to the good work of the Association and promised that the Government would support it more strongly in the coming year.

Mr. W. R. Brown told of the success of similar associations in the United States.

Mr. W. C. J. Hall pointed to the greatly increased efficiency of such organizations as compared with individual effort, and hoped to see the time when five or six similar associations would cover the entire forest area of the province from the Ottawa Valley to Gaspé.

Mr. R. H. Campbell said this was the first organization of this kind in Canada. It had been a great success and he hoped to see the plan adopted not only in other parts of Quebec but in western Canada.

Mr. Clyde Leavitt indicated that what the Railway Commission had done in securing the co-operation of the railways and federal and provincial governments in patrolling railway lines in the west they desired to extend to the eastern lines, and in this way there could be co-operation in the St. Maurice Valley of the limit holders, the government and the railways and Railway Commission.

Lt. Col. Hibbard brought this out further by stating that the Quebec Utilities Commission had considered the regulations for fire protection of

the Dominion Railway Commission so good that they had adopted them for railways with provincial charters. As Mr. Hall was the provincial officer to carry out these regulations, and as he was officially co-operating with Mr. Leavitt, this linked up the whole work so that all agencies for forest protection were working in harmony. Mr. Hibbard also pointed to large areas in Quebec which should be reforested.

Mr. Piché brought his congratu-

lations to those engaged in the work of protection which was the complement of his own work of utilization and reforestation.

It was generally admitted by the speakers and by those attending the gathering that the pioneer work of this the first forest protective association in Canada had been so successful and had resulted in such economy of effort and money that it would soon be widely copied throughout Canada.

Private Initiative in Replanting.

What the Pejepscot Paper Company is doing.

In reply to an enquiry from the Secretary of the Canadian Forestry Association Mr. Charles P. Cowles, manager of the Department of Woodlands of the Pejepscot Paper Co., writes in regard to the planting operations of that company in Canada. The company has established a small nursery for reforestation purposes at Salmon River, New Brunswick, and a similar one at Cookshire, Quebec. These nurseries were established two years ago and contain seed beds with plants one year old and two years old this spring. It is the intention to make per-

manent plantations with some of the two year old seedlings as an experiment this spring, but generally it is expected that the plan of allowing these seedlings to remain two years in nursery rows before planting out will be followed. While the company's plans are not matured it is generally understood that it is the intention to raise a moderate amount of seedlings each year for reforesting vacant and cutover lands on the company's holdings. The pictures herewith show the seed beds in the nursery at Cookshire, Quebec.



Nurseries of the Pejepscot Company at Cookshire, Quebec.

Genesee Valley Forestry Association.

A very significant movement in different parts of the United States is the formation of active local forestry associations which work in harmony with the state and federal organizations, both governmental and private. One of the latest and most promising of these is the Genesee Valley Forestry Association with headquarters at Rochester, N.Y. This was formed on Feb. 15. The officers are: President, Wm. F. Dunbar; Vice-President, Joseph W. Hauser; Secretary, John Dennis, Jr.; Treasurer, Norman C. Schlegel. As this subject is of great interest to the members of the Canadian Forestry Association the Secretary, Mr. Dennis, has been asked and has kindly consented to write an article for the *Canadian Forestry Journal* describing the work of this Association and its relation to the New York State Forestry Association. The following is from the Rochester Democrat and Chronicle with the editorial staff of which Mr. Dennis is connected:

Rochester's interest in scientific and practical forestry was again demonstrated on Saturday by the formation of the Genesee Valley Forestry Association, an organization which plans to extend its influence throughout the entire valley of the Genesee from Lake Ontario on the north to the summit of the Alleghenies on the south, where the Genesee river originates in mountain rivulets. It is understood that for scientific and educational purposes chapters of the association will be formed throughout the valley, wherever interest can be aroused, and that the association proper will act after the manner of a clearing house of desirable knowledge regarding theoretical and practical forest and park practice. It is very appropriate that Rochester should be the home of an association of this kind. Each one of the great parks of the city embraces notable examples of the best practice in modern constructive forestry. In planting the original park forest the advice and counsel of the most famous arboriculturists in this and other countries has been drawn upon, and this knowledge is available by way of object lessons and historical record.

It is also understood that the Genesee Valley Forestry Association, as a part of its first practical work, will secure sample woods from the portion of the Genesee Valley Park forest, which is about to be sacrificed to make way for the Barge canal. Something over 400 choice forest and shade trees, planted twenty-three years ago, will of necessity be destroyed. Sample trees of each species cut from the canal zone will be utilized for educational cabinets, to be at the service of the different chapters throughout the valley.

SWEET AND SLOW.

J. E. Middleton in Toronto News.

Sweet and slow,
Sweet and slow
Sap from the maple tree-ee.
Now flow,
Prithee, show.
Kindly to Bards like me-ee.
Into the bucket consistently flow,
While the spring sun is a-melting the snow
Into a little sea-ee.
As through my shoes the watery ooze
Seeps.

Stoneboat slow,
Stoneboat slow,
Call at the maple tree-ee.
Gently, Flo,
Haw! Whoa!
Gather the sap for me-ee.
Into the butt pour the watery bliss,
Leaves and small twigs are expected, I wis.
Now let the old mare Gee-ee
Through the swale, where about half a pail out-
Leaps.

Sweet and low,
Night winds blow,
Blow through the maple tree-ee.
Coals glow,
Pots hang low
Boiling the stuff for me-ee.
Give us a taste of the nectar divine,
Better than sherry or Burgundy wine,
Beautiful stuff to see-ee.
Yellow and sweet, we just think we could eat
Heaps.

The first pulp was made in the new pulp mills at Dryden, Ont., on March 19. A number of those interested in the works were present on the occasion.

New York State Forestry Association.

New York State has now an active forestry association, the same being formed at a largely attended meeting in Syracuse on Jan. 16. While this has been brewing for a long time it is directly the outcome of the conference held in Albany in May, 1912, for the discussion of forestry problems. A committee was then appointed to consider the organization of a forestry association, and Dr. Hugh P. Baker, Dean of the New York State College of Forestry, was elected Chairman. During the year this committee has sent out over a thousand letters to persons who were likely to be interested in the subject. The committee was amazed at the interest shown in the large number of replies received.

Though the organizing convention was but a one day meeting it was packed with more matters of importance than often go to the making up of a two days' convention. There

were several hundred people at the morning session to hear Mr. Gifford Pinchot. There was a record attendance at the Chamber of Commerce luncheon, and the new association started off with fifty-three charter members.

The officers elected were: President, Dr. N. L. Britton, Director of the New York Botanical Garden and Museums; Secretary, Dr. Hugh P. Baker; Treasurer, Albert T. Brockway, of Syracuse, N.Y., and a strong executive committee.

Dr. Baker, upon request, has been so kind as to send an account of the transactions of the meeting, and these will be dealt with in future issues of the *Canadian Forestry Journal*.

The close supervision now being given to the game side of forestry in Ontario was indicated by the arrest and dismissal of a game warden for breaking the law by having skins illegally in his possession. He was fined \$450 for the offence.



Another view of the nurseries at Cookshire, Quebec.

DIRECTORS' REPORT.

Adopted at the Annual Business Meeting of the Canadian Forestry Association, Feb. 5, 1913.

The Board of Directors beg to submit the following report of business done during the year 1912:—

According to Section VI. of the Constitution, the following Territorial Vice-Presidents were appointed:

Ontario.—Hon. W. H. Hearst.
Quebec.—Hon. Jules Allard.
New Brunswick.—Hon. J. K. Flemming.
Nova Scotia.—Hon. G. H. Murray.
Manitoba.—Hon. R. P. Roblin.
Prince Edward Island.—Hon. J. A. Matheson.
Saskatchewan.—His Honor G. W. Brown.
Alberta.—Hon. A. L. Sifton.
British Columbia.—Hon. W. R. Ross.
Yukon.—Geo. Black, Commissioner.
Mackenzie.—F. D. Wilson.
Keewatin.—His Honor D. C. Cameron.
Ungava.—His Grace, Mgr. Bruchesi, Archbishop of Montreal.

The Thirteenth Annual Meeting was held at the same time as the Ottawa Convention. This Convention was eminently successful and resulted in stimulating further interest in the work of forest conservation, particularly in that part of it which has to do with an efficient personnel in the various forest services. The presence of the Prime Minister, the Leader of the Opposition, and eminent foresters from the United States, added to the weight of the meeting. The fact that the Convention was held at the same time as the Annual Meeting of the Canadian Lumbermen's Association, and that some of the functions were in a measure of a joint character, increased its interest and importance.

The President elected at that meeting was Mr. John Hendry, of Vancouver, who was at the time in Europe. Mr. Hendry met in London in the early spring Hon. Richard McBride, who renewed an invitation that had been made by the Government of British Columbia to hold a Convention in Victoria, B.C. After considerable correspondence it was decided by the Directors to meet in Victoria on Sept. 4, 5 and 6. His Royal Highness the Governor General graciously consented to open the Convention if it should be held during the time of his visit to the coast, but, as in the end it was found that this would be impossible, the Convention was opened by Sir Richard McBride, Premier of British Columbia, and was in all respects successful. There was an unexpected large attendance from Eastern Canada.

All the provinces were officially represented except Nova Scotia and Prince Edward Island, the numbers attending from Quebec and Ontario being particularly large. The new British Columbia forest act which went into force on July 1 was naturally the chief subject of discussion. Hon. W. R. Ross, Minister of Lands, outlined the Government's position, while representatives of British Columbia limit holders discussed the new law very carefully. Besides this the forest conservation work in other provinces was dealt with and the resolutions passed were not confined to British Columbia, but were of a general character. Here as at Ottawa particular attention was paid to the subject of efficiency in the forest service. The full particulars of the Ottawa Convention have already appeared in the Annual Report for 1912, and the full report of the Victoria Convention will appear in the Annual Report for 1913, which will be issued in a few weeks.

Progress in forest conservation has been steady in Canada during the year. The work of the Dominion and the large forest provinces has gone on developing for the most part without any sudden changes. It would appear that the total expenditure in 1912 on forest protection by federal and provincial governments and by private individuals and corporations amounted to between one million and one million and a half dollars.

The Dominion Forestry Branch in addition to its protective, tree-planting and investigating work, made an examination for the purpose of ascertaining whether certain areas in the Railway Belt in British Columbia, and others south of Lesser Slave Lake in Alberta, in northern Saskatchewan and in south eastern Manitoba should be put into forest reserves.

In British Columbia the new forest act which has been in preparation (including the work of the forest commission) for some years, went into force on July 1, and the organization of the forest service under the same resulted in the employment of a number of forest engineers, and a largely increased force of rangers.

In Ontario the government and the limit holders had over one thousand fire rangers in the field during the danger season.

In Quebec the St. Maurice Valley Forest Protective Association carried out its first season's work with success, and the plan of

co-operation in fire fighting seems likely to be widely extended. The Province of Quebec made a beginning in the work of planting up denuded sand lands.

Private efforts in regard to forest protection were on a larger scale than ever before. The Canadian Pacific Railway transformed all its locomotives between Field and Kamloops from coal burners to oil burners, and besides a great deal of investigating, nursery and planting work toward the close of the year, offered prizes aggregating \$2,400 to farmers for the best plantations in 1914. A number of timber limit holders, particularly in Quebec, have erected telephone lines and cut trails to protect their holdings.

In addition to these improvements the season, being exceedingly wet, was an excellent one for forest protection, so that there were few serious fires.

One of the things for which the Association has pressed, a federal laboratory where the different woods of Canada might be thoroughly tested and studies made in preservation and utilization, has not yet been secured. The usefulness of such a laboratory is beyond question and it is hoped that its establishment may be chronicled before the lapse of another year.

Forestry educational work has proceeded steadily during the year, and quite a body of trained foresters, graduates of forest schools, is now to be found in Canada. Forestry is beginning to be recognized as a profession. Another part of the field of education has not yet been touched, namely that of training the rank and file of the forest protective army, the forest rangers, for their duties. This training is for men already in the employ of the forest services who have passed tests as to their ability and experience. While every effort should be made to admit only fit men to the services it is felt that these would all be immensely more efficient if they could be given a few weeks' training under men who know the best methods of protecting timber, avoiding waste in utilization, fighting fires, etc., and who have the faculty of imparting this knowledge to others. Ranger schools have proved very efficacious in other countries in increasing the efficiency of the men, and in showing them how to do the work to the greatest advantage. They have thus developed an esprit de corps in the force which has done much for the whole service, and to develop the idea of forest conservation among the people. One of the next things for which it is felt the Association should press is for the establishment of ranger schools in connection with the federal and provincial forest services.

While the circle of directors and officers of the Association has not been broken by

death during the year, yet the Canadian Forestry Association and the cause of forest conservation have lost warm friends through the death of Sir Edward Clouston, Vice-President of the Bank of Montreal; Senator Rolland, Mr. R. W. Shepherd of Montreal, Mr. Otis Staples of British Columbia, and Mr. H. F. McLaughlin of Arnprior.

On the way back from the Victoria Convention the Secretary delivered a number of lectures, but this work and the work of issuing bulletins to the newspapers for reproduction in their columns has been less than in the year before owing to the great amount of time which had to be spent on these Conventions. Towards the end of the



By dint of much perseverance Rev. C. Lord, a minister in Peterboro Co., Ont., has cultivated the friendship of some of the wild creatures of his neighborhood. In the illustration he has in his hands one of his wild friends, a chipmunk.—*Farm and Dairy*.

year, however, the work of supplying material for the newspapers was taken up again, and in the coming year it is expected that it will be made one of the leading features of the work. The newspapers throughout Canada have expressed a willingness to make known to the public what is being done to further conservation and what is desired by the Association.

A meeting of the Directors was held on Dec. 6 to present to the Dominion Government those resolutions which related to federal forestry work. In the absence of the President and Vice-President, Mr. G. Y. Chown, Past President, headed the deputa-

tion, and along with Senator Bostock and Mr. Ellwood Wilson, presented the resolution urging the extension of Civil Service regulations to the outside forest service. The deputation was kindly received, and the members of it were led to hope from the reply of the Prime Minister that this will be done in the near future.

The membership of the Association continues to increase. In the year 116 names were dropped because of death or resignation and 191 added, leaving the net membership at 2,865. The amount received from membership fees in the past year was \$2,249. While the usual efforts have been made to let the public know of the work of the Association, there has been no special campaign to increase the membership. This has been due to two reasons: first, the lack of time caused by the holding of two Conventions in the year, and, second, the fact that it is found that the best means of increasing the membership is to make the Association useful. It is hoped in the coming year not only to do affirmative and constructive work, but also to make this as widely known as possible, with the object of increasing both the membership of the Association and the funds at its disposal.

The report of the Treasurer which will be laid before you will show that while the expenditures in the past year have been the

largest in the history of the Association, the income has fortunately been proportionately large, and that there is a substantial balance in the treasury. The Dominion Government has continued its grant of \$2,000 per year, and the Government of Ontario has contributed \$300, and the Governments of Quebec and British Columbia \$200 each. In addition to this the Government of British Columbia made an appropriation of \$1,500 toward the expenses of the Victoria Convention, while the British Columbia Lumbermen's Association donated \$250 and the B. C. Mills Timber and Trading Co. \$240.

The report of the auditors, which will also be presented to you, shows that the funds of the Association have all been properly accounted for.

On the whole, while the work to be overtaken is very large and the need of prompt action to save our forests pressing, your Directors believe that Governments and people are beginning to realize the need of forest conservation, and they therefore urge the putting into operation of a constructive program for the coming year,—one that will show that the ideal of conservation is not the locking up of resources but their wise use by and for the people of Canada.

All of which is respectfully submitted.



In the great timber Province—Hastings Street, Vancouver.

Utilising Sawdust.

The uses of sawdust was the subject of an interesting article in the *American Lumberman* recently from the pen of C. W. R. Eichoff, M.E. The writer, in his introduction, alludes to the immense piles of sawdust and other mill refuse to be found near many large mills, and discusses, first, the use of this waste for fuel.

'The inconvenient process of burning this valuable waste,' he writes, 'taking into consideration the fact that this sawdust, when moderately dry, has the same heat value as the wood from which it originates, has led to the design and construction of many different styles of furnace, which in some cases have brought a betterment and in others failure. Furnaces of the "Dutch oven" style are mostly used in this connection, and especially with boilers. But there are other convenient constructions now in existence. In all these furnaces the main effort was directed to a better distribution of the air necessary for a successful combustion of the material.

'Abroad, where conservation of the natural resources has been practised to a greater extent than on this continent, experiments have been made to form this dust into briquettes. At present a number of briquetting plants are in successful operation across the Atlantic, and of later years lumbermen and other mill-owners on this side of the Atlantic have become interested in the briquetting of such sawdust. But the American has not looked favorably on this utilization. The large lumber concerns considered it more profitable not to bother with such a process, claiming that these briquettes can be used only to a small extent and could not compete with other fuels in which this continent is so rich. More interest in the matter was shown by the smaller concerns, where the loss of

such valuable wood wastes demands serious consideration. Many owners took up the proposal, but dropped it when they learned the cost of such sawdust-briquetting plants. Considering that a product has to be manufactured which requires for its fabrication either a suitable binder or great pressure not using a binder, it is essential that every part of such a plant be designed and constructed with the utmost care and skill in all its details.

'Suitable binders are water-gas, pitch, tar, rosin, flour, water-glass and others of the same nature as used in the briquetting of coal. As these binders materially increase the cost of manufacture, their use was found prohibitive, and machines are now used that deliver the goods without the application of a binding material.

'The sawdust in this process has to be perfectly dry before being put into the press. From the press the briquettes are transported automatically into a cooling room, and when cool they are hard and ready for transportation. Such briquettes are an excellent fuel for residence use in fire-places and stoves, do not corrode and leave very little ashes and soot. The cleanliness, rapid ignition, intense heat and odorless combustion make them a fuel preferable to the best wood. They are also the most convenient fuel for power-house use in saw-mills and in logging locomotives, replacing coal or sawdust, which latter would take considerable space. They are also very convenient as a kindling material. The briquettes are of oval form, to facilitate ventilation when piled up.

'Presses are built with a capacity of 24 briquettes a minute, giving 14,400 briquettes in ten hours, each briquette weighing about half a pound, which would be equivalent to a daily output

of 3.6 tons. The power required for the driers and this press amounts to about sixteen horse-power. Another press has a capacity of nine tons a day, requiring 45 horse-power for the machine.

Use for Dry Distillation.

'A very attractive process is the charring of sawdust and subjecting it to a process of dry distillation. The remaining charred material (charcoal) is then briquetted and yields a briquette of very high heat value, equivalent to the best anthracite coal. The process is practically the same as that used in the distillation of wood. The resulting by-products are an illuminating gas, which can be used to light up the mill, wood vinegar or pyroligneous acid, wood spirits or methyl alcohol and wood tar. The wood tar can be subjected to further treatment and yields creosote, benzol, naphthalin, paraffine, etc.

'Sawdust has been used for the operation of gas producers for power purposes, in which cases it can be handled either in the loose form or in the form of briquettes.

'Related to the briquetting of sawdust is the manufacture of artificial wood. This material is of great tenacity and strength, does not decay and is less susceptible to the action of the atmosphere than is natural wood. All this artificial wood can be sawed, planed and cut, but not split. The manufacture of it has become quite an industry abroad. Decorations for walls, ceilings and furniture are manufactured from mixtures the essential part of which is sawdust. These ornaments rival carved work and are a great deal cheaper, replacing those made of zinc, papier-mache and artificial stone or cement.

'Sawdust is the essential part of a stone-like material used for building purposes and also for paving blocks. These paving blocks are said to outlast the regular creosoted wood blocks.

'Sawdust is pulverized and used

instead of sand. In this state it can be colored, perfumed and used for many purposes, such as for sachet bags and the like.

Miscellaneous uses.

'The writer remembers the time when this fine sawdust was used in offices instead of sand and blotters. Its polishing qualities in the pulverized state for gold and silverware are well known. Further, from fine dust of colored wood, such as mahogany, etc., stains can be made to be used in imitating other woods. With linseed oils one can make a filler. The material for this filler is best obtained from the kind of wood on which it is to be used.

'Sawdust and shavings are used for packing glassware, porcelain and other ceramic articles. In this state it must be dry, so as not to have a detrimental effect, especially on ceramic goods.

'The use of sawdust for cleaning floors is too well known to need mention; not so generally known is its property of preserving eggs.

'Any person handling oily and painty tinware should know that it is an excellent means for cleaning fresh paint from such tinware, rendering the vessels perfectly dry and clean.

'Sawdust is used in the manufacture of insulating material for steam boilers and steam piping, and as insulating filler in fireless cookers, ice boxes, walls, etc.

'It can be laid in cement floors instead of sand, rendering these floors warmer and more porous. It is used for roofing material instead of sand, making roofing paper lighter for transportation and so reducing cost.

'Charred sawdust is an excellent means for filtration of liquids and has disinfecting qualities, making it more suitable for this purpose than ordinary charcoal. Added to brick it makes a more porous brick. Mixed with clay it can be used for the manufacture of filtering articles; this has proved to be an attractive process.

'Sawdust is used to absorb mois-

ture in building walls that are exposed to water. In the manufacture of cheap wallpaper and artificial flowers it is used in the form of a fine dust. Other uses are for cementation in steel mills, for cleaning purposes in the production of gas, in the manufacture of calcium carbide and carborundum, and, in foundries, for pickling.

'Everybody knows of its application in the manufacture of powder and explosives. Further uses are for floors in gymnasiums and riding schools, for the manufacture of paper, for slippery streets in winter, and for bedding in stables. Sawdust improves soil mechanically, and, when saturated with stable manure, it also works

chemically on the soil and so improves it. Sawdust is also used in sawdust mortar (for moist places) and in horticulture to protect hotbeds, etc. With proper manipulation a good wood soil, so valuable in gardening, can be obtained. In the manufacture of soap for washing and cleaning purposes sawdust is also employed.

'Very promising is the manufacture of sugar and alcohol out of waste woods; but these processes are not yet far enough advanced to be of commercial value and to justify large expenditures at the same time. Finally, sawdust is the only material now used for a cheap production of oxalic acid.'

Pennsylvania's Fine Fight

Chestnut Tree Blight Commission Believe they can Exterminate the Evil

While the following, taken from the Philadelphia Post, is somewhat enthusiastic in its character, nevertheless the authorities of the Chestnut Tree Blight Commission of Pennsylvania state that it is substantially correct. It is gratifying to know that such success has attended the efforts of this commission. It is both an incentive and a warning to Canadians to be on the alert in fighting at the earliest possible stage the enemies which threaten our forests.

A current example of the effectiveness of common-sense, scientific methods is found in the work of the Pennsylvania commission now engaged in exterminating the chestnut-tree blight. This organization is barely eighteen months old; but in that short space of time it has quieted the fears of the almost panic-stricken landowners and has got the situation well in hand. The entire field has been thoroughly scouted, the centers of the disease located and a great quantity of infected trees treated, destroyed or rendered harmless.

Chestnut blight is caused by a fungus. There are two fungous growths that are very similar in appearance, but it has just been discovered that only one of them is harmful to the trees. Studies made by the commission indicate that the disease-creating fungus is spread in the form of spores, which

are shot out into the air in enormous numbers, particularly in wet weather. This new information is of importance in that it will modify the existing methods of preventing the spread of the blight.

Wherever the inspectors of the commission find blighted trees they cut out the diseased portions of trunks and branches. This method had formerly been tried without much success; but improved technique has made it thoroughly effective. The diseased wood, after its removal, is burned, and when the new sprouts come they are usually found to be healthy.

Just as boards of health quarantine individuals, modern foresters quarantine diseased trees. Three or four serious outbreaks of chestnut blight in the western part of Pennsylvania were traced to infected nursery stock. Since this time the inspectors have turned their attention to the nurseries and have examined every individual tree offered for sale. This is a costly and tedious process, but it appears to be justified by the results it produces.

Not the least important researches of the commission are being devoted to tree medication and the discovery of a liquid fungicide that can be safely and effectively injected into trunks and branches. In this field the investigators encounter one of the great obstacles of human medication — the difficulty of finding a substance that will kill the germs without injuring their host. In this interesting and important work the commission has the co-operation of the office of Forest Pathology at Washington.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

USE OF THE LETTERS 'F.E.'

Editor Canadian Forestry Journal:

Sir,—I am enclosing herewith a circular letter recently sent to the various members of the Canadian Society of Forest Engineers, by direction of the society at its last annual meeting. I hope that you may find room to reproduce this letter in your columns.

The feeling of the society, which represents the body of professional foresters in the Dominion, is distinctly adverse to the loose use of this designation, or degree, which has already been made by certain individuals, and which finds a certain analogy in the indefinite use so often made of the designation 'C.E.' (properly a graduate university degree). As the letter points out, the letters 'F.E.' may rightfully be placed after the name only when the man has been granted this degree by a university.

While the society does not expect to control the usage of individuals in the matter of using these letters, it wishes that its position in regard to them may clearly be understood and its desire to restrict the use of the letters to those who have a clear and undisputed right to such use.

Respectfully yours,

F. W. H. JACOMBE,

Sec.-Treas. Canadian Society of Forest Engineers.

THE CIRCULAR.

The attention of the members of this society is called to the fact that membership in the society gives no right to the use of the letters 'F.E.' after any member's name. Thus, John Smith does not, simply because he is a member of this society, acquire thereby the right to sign his name 'John Smith, F.E.', or in any way to so designate himself.

These letters can properly be added only to the names of those who have been granted the degree of Forest Engineer by some university. The University of Toronto, for instance, gives the degree of Forest Engineer (and so the right to use the letters 'F.E.') to certain of its graduates who have (1) obtained the degree of Bachelor of Science in Forestry (B.Sc.F.) and (2) have also taken several years of practical work after graduation.

It is, of course, taken for granted that members of this society, unless they have gained the degree in the regular way as aforesaid, will refrain from using the letters after their names.

The letters 'C.S.F.E.' or 'M.C.S.F.E.' have been suggested as proper to be used by members of this society to indicate their membership therein.

Officers for 1913.

The following have been elected officers of the Canadian Society of Forest Engineers for the ensuing year: President, Dr. B. E. Fernow; Vice-President, Mr. R. H. Campbell; Secretary-Treasurer, Mr. F. W. H. Jacombe; Executive Committee, Messrs. Ellwood Wilson and E. J. Zavitz.

RANGER SCHOOL AT WORK.

During the past winter the students of the State Ranger School of the New York State College of Forestry at Syracuse University have been doing practical work at Cranberry Lake. The boys have been at work estimating the timber on snowshoes. The School authorities believe that by careful management the School should be able to make from \$2.50 to \$4 per acre per year on the 1,800 acres of the tract.

THE MAILING LIST.

Our mailing list is made up from latest data at hand and is corrected monthly. Each member is requested to report to the Secretary promptly any error in his address, or any change made or contemplated, that the *Canadian Forestry Journal* may reach every member regularly.

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The Canadian Forestry Association is the organization in Canada for the propagation of the principles of forest conservation. This it does by means of conventions, meetings, lectures and literature.

It is a popular organization supported by the fees of members, assisted by some government grants.

There is a vast field of work before the Association which is only limited by the funds at the disposal of the Association.

Those who are not already members are invited to join and assist in the work. The membership fee is one dollar per year, and this entitles the member to attend and vote at all meetings and to receive the Annual Report and the *Canadian Forestry Journal*. Women as well as men are eligible for membership.

Applications for membership and requests

for literature and information may be addressed to

The Secretary,
Canadian Forestry Association,
Canadian Building, Ottawa, Can.

OBJECTS OF THE ASSOCIATION.

- (1) The exploration of the public domain, so that lands unsuitable for agriculture may be reserved for timber production.
- (2) The preservation of the forests for their influence on climate, soil and water supply.
- (3) The promotion of judicious methods in dealing with forests and woodlands.
- (4) Tree planting on the plains and on streets and highways.
- (5) Reforestation where advisable.
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Write for catalog of Biltmore Forest School, addressing—

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Candidates for advanced standing may take examinations in any subject but are required in addition to present evidence of a specified amount of work done in the field or laboratory.

The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

For further information address

JAMES W. TOWNLEY, Director
NEW HAVEN - - - - CONNECTICUT

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CONTENTS:

	Page.
Winnipeg Convention	49
Editorial Notes	50
Dominion Forest Service	51
Booth, Mr. John R.	53
Pulpwood Statistics for 1912	54
Riordon, Mr. Carl	55
British Columbia Regulations	55
Plantations in Foreign Countries.....	56
Dwight, Mr. T. W.	57
Work of a Forest Engineer	58
With the Forest Engineers	62

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Yukon:—Geo. Black, Commissioner.

Mackenzie:—F. D. Wilson.

Keewatin:—His Honor D. C. Cameron.

Ungava:—His Grace Mgr. Bruchesi, Archbishop of
Montreal.

WINNIPEG CONVENTION.

Arrangements are now rapidly progressing for the Winnipeg Convention within the days July 7 to 10. The exact apportionment of these days has not yet been decided, but it is possible that the Convention will open with addresses of welcome and replies on the evening of July 7, and that the business sessions will take place on July 8 and 9. In any event the meetings will lie within these four days.

Place of Meeting.

The sessions will be held in one of the halls of the Winnipeg Industrial Bureau in the heart of the city at the corner of Main and Water streets. This building, which covers the site of the famous Manitoba Hotel and Northern Pacific Railway Station, has two large assembly halls and a number of smaller rooms which may be used for committee rooms, etc.

Railway Arrangements.

Owing to the fact that this meeting will be held during the first days of the Winnipeg Exhibition, those attending from within the Winnipeg Fair territory will purchase the special rate tickets then in force, and will thus not be required to secure certificates. The Winnipeg Fair territory embraces all the country in Canada between Fort William and the Calgary Edmonton district. From all stations in Canada east of Port Arthur members attending as delegates can secure a round trip for a single fare (plus 25c) on the certificate plan, the particulars of which will be furnished on application to the Secretary. The

going dates for these tickets will be July 3 to 6 inclusive.

The certificates signed by the Secretary at Winnipeg will be honored up to and including July 24 for return.

These rates are for all rail trips. Where it is desired to make part of the trip by steamer across the Great Lakes the rates will be as follows:—

Going all-rail, returning lake and rail, \$9 additional

Going lake and rail, returning all-rail, \$4 additional.

Going lake and rail, returning same route, \$13 additional.

Convention rates have been secured for delegates from British Columbia points, particulars of which may be had upon application to the secretary.

Mr. R. S. Gourlay, President of the Canadian Manufacturers Association, in addressing the Canadian Club of Ottawa, on March 29, on 'Ontario Present and Future,' drew attention to some matters which are apt to be overlooked. People often spoke of wheat as king, yet timber, not wheat, was the largest single crop in Canada. The figures are: timber, \$166,000,000; wheat, \$121,000,000. Mr. Gourlay also drew attention to the value of the tourist or sporting value of fish in Ontario. Ontario was fitted to be the great holidaying ground of the continent, if not of the world, and it behooved her, therefore, to protect these game and recreation features by protecting her forests. Mr. Gourlay has long been a friend of forest conservation, and this is an aspect that is coming more and more to appeal to the business men of the country.

Those who do not believe forest conservation is making progress on this continent must keep their eyes closed to the fact. Even five or six years ago it was difficult to get material dealing with forest conservation. To-day it is impossible to take up a newspaper or magazine without finding articles on the subject.

Besides this on every hand organizations are springing up, or are being strengthened, to support the cause. There is much to be done. There is no time to lose for each year sees inroads made by fire into our forests, one hundred or two hundred years old. There is much avoidable waste. There is every need for all friends of conservation to work to have this progressive sentiment crystallize into action. But at the same time, while there is the need, there is also the encouragement that much has been accomplished and that ground is being gained every day. It is the aim of the *Canadian Forestry Journal* to give a bird's eye view of the field, and the result is that articles have to be shortened in order that even important happenings may be briefly chronicled. Our readers are sending in communications as never before, and as it will always be the aim to publish first those articles dealing with our own country and our own time, the Editor will appreciate the development of this feature.

The preservation of mine timbers by chemical treatment has not yet been adopted by the mining industries of Canada. In many localities, however, the distances required to transport mining timbers are becoming greater, poorer qualities of woods have to be used and the annual cost of the upkeep of mine timbering is becoming greater. In the United States much has been done in the treatment of mine timbers and it has been proved that a treatment of creosote or zinc chloride decreases the destruction due to decay, fire and insects. This increases the life of the timbers and decreases the annual cost of replacing mine timbers. Timber used in mines has, on the average, a shorter life than wood used for any other purpose. The surroundings in a mine are very conducive to rot, which, after a period of three to five years, causes the timber to break, crumble and become useless. Experiments have been conducted in United States mines with a row of untreated and treated mine props alternately placed. In one instance, after 18 months, every untreated stick was weakened by decay and broken, while the treated props were sound and useful. From various practical experiments of this kind with different species of wood important results have been obtained.

Dominion Forest Service

Outline of Present Organization and Projected Lines of Work.

T. W. Dwight, Assistant Director of Forestry.

The Dominion Forestry Branch has, during the past three months, been directing its best energies to a comprehensive consideration of the possible means of taking, during the coming season, a big step forward in the direction of putting its organization into definite form. It has been for some time apparent that radical changes and elaborations in the general structure of the organization and in the methods of handling business were required. The urgent necessity for this has been brought about by large increases in the area of the forest reserves that followed the careful examination of the mountain regions in Alberta and British Columbia. These reconnaissances have been continued in the newly surveyed districts lying in the wooded belt of country extending to the north of the prairie regions of the Provinces of Manitoba, Saskatchewan and Alberta. They have revealed the fact that there, too, are extensive areas that will be great sources of wealth and benefit to the rapidly growing population of the unbroken agricultural regions to the south, if they are managed scientifically with a view to continuing permanently on them the production of wood. With this situation prominently in their minds, the chief thoughts of the Director of Forestry and his chief lieutenants have been directed towards taking the steps necessary to enable the Forestry Branch to cope with problems that will be thrust upon them at a rate all too fast to enable it to keep pace. There has been, too, the feeling of the responsibility of the Dominion organization to take the leadership in efficient and progressive administration, so that their action might serve as a stimulus to the provincial organizations in making similar progress towards placing under wise and provident care the valuable resources entrusted to them.

The Framework.

A tentative framework for the organization was outlined at the beginning of the season of 1912, and preliminary steps were taken to carry on the work in accordance with it. The practical problems immediately encountered when the actual operation was in effect showed, in innum-

erable instances, the necessity of rapidly developing the organization along the general lines laid down. The most pressing details requiring attention were brought prominently into view, and, with the purpose of considering these, a meeting was arranged at Ottawa of the Inspectors having charge of the different divisions of the work in the field. For the space of a month there were taken into consideration such problems as the general revision of the regulations governing forest reserves, the construction of fresh outlines to indicate the methods by which the business of the Forestry Branch should be handled, and the delineation of the present and future steps necessary to the developing of an efficient and well-trained personnel. The management of forest reserves for the fullest benefit of the public involves many problems. There is not only the control in a scientific manner of the disposal of the timber grown on them, but also the making available of the grazing lands in many places intermingled with, and inseparable from, the timberland. The disposal of the mining rights, which in the Rocky Mountain coal areas are enormous in extent and value, must be provided for. The regulation of the use of land for railways, summer resorts, towns and other numerous purposes is a many-sided problem. Fish and game must also be protected, so that the forest reserves may remain a permanent asset to the general public, not only on a material basis, but also from the standpoint of health and recreation. When this is realized, the extent of the problems to be met may be comprehended.

The subdivision of the organization into distinct branches to handle the various lines of work was an initial step. The duties of the Head Office at Ottawa were first outlined. Here the general plans must be submitted and considered, and the control and co-ordination of the work secured. Detailed records of all work must also be kept here, in order that information in regard to it may be put before the public through the agencies of the press and of government publications, and directly before the representatives of the people, the ministers of the Crown and the

members of parliament. To cope adequately with the demands of this work, the need of a large increase in the staff at this point was apparent.

In the field the work has been placed under the supervision of Inspectors. For the administration of forest reserves, districts have been outlined in accordance with provincial boundaries. In each of them, the staffs in charge of the forest reserves are to be under the direction of a single field-officer. For these positions men have been selected who possessed large ability in administrative matters, and the highest qualifications for forest administration, and who were calculated to be fitted for developing the work along the best and most efficient lines.

Protection Work.

The duties of the Forestry Branch include the protection of the timber on all lands under the control of the Dominion government, no matter whether or not it is included in forest reserves. For the protection of the lands outside of the forest reserves, a special staff has been maintained. The work has been put, during the past year, under the supervision of an Inspector. A staff of Chief Fire Rangers have recently been permanently appointed, and they will be engaged throughout the year, in familiarizing themselves with, and planning for, the solution of the problems to be met in their respective districts. The advances made in this department of the work have been greater than in almost any other. The inauguration, through the Board of Railway Commissioners, of a patrol by the railway companies of the lines passing through timbered districts has enabled the Forestry Branch, which heretofore carried out this work, to extend the protection given by its staff to many new areas removed from the present railway lines. The attention of the Inspector of Fire Ranging during the present summer is to be devoted, for a considerable time, to the further extension of the fire patrols in regions hitherto untouched. A trip has been planned which will enable him to secure a first-hand knowledge of the vast needs of the timbered area draining into, and lying along, the lower reaches of the Mackenzie river and probably also of the Yukon Territory.

The increase of the area included in the forest reserves to take in the non-agricultural areas at present lying in the van of the rapidly extending settlement is a problem that is an ever-pressing one. Before any land is recommended to be included in a forest reserve a careful examination is made of it. Not only must the timber resources that may be comprised in it be determined, but there must also be investigated the nature and agricultural possibilities of the soil and the relation of the for-

est cover to the maintenance and regulation of the water-flow of the region. The information furnished in the preliminary reports made by the Dominion Land Surveyors is made available to the men carrying on these examinations. The decision as to the ultimate disposal of the land can then be based on a broad consideration of the best permanent use that the land can serve for the community. It is keenly felt that this examination should be made, and the decision reached, well in advance of any settlement in the region, in order that new settlers may be guided into the best agricultural regions and may be protected from attempting settlement on lands where agriculture cannot thrive. In all parts of the Dominion, and particularly in the Western Provinces, where settlement of new lands has of late progressed so rapidly, many unfortunate instances have come under observation of settlers locating, through ignorance, on lands unsuited to their occupation. The result has been a later abandonment of the land with a great loss to the individual and with a greater waste of capital and energy to the country. It may be seen, therefore, that this work of the Forestry Branch has a much broader scope than that connected with the mere management and protection of forest lands, as it includes the wise regulation of settlement. This last is one of the most important duties of the government.

As the areas to be examined are in most cases removed from the existing centres of forest reserve management or of fire patrol, this work is organized as a separate division. Men with technical training in forest and soil conditions and in the methods of forest reconnaissance are employed to carry on the field work. An agricultural expert with special training in regard to soils has recently been engaged to insure the bringing to bear of the most advanced knowledge on this phase of the problem. The results of the investigations are made available to the public in the form of government bulletins whenever new conditions and new problems are met.

The areas to receive special attention during the coming summer are the Peace River district, the mountainous regions of the Railway Belt in British Columbia, some of the areas of sandy, stony and swamp soils in the northern portion of Saskatchewan, and in Manitoba the area lying between Lakes Winnipeg and Manitoba.

Tree Planting.

Another important division of the work of the Forestry Branch is the extension of tree-growth in the treeless settled regions of the prairie Provinces. This is done by the encouragement of private planting. Seedlings of hardwood species

are distributed to settlers free of cost, and seedlings of coniferous species are furnished at the cost of growing them in the nurseries. This work, inaugurated about a dozen years ago, has met with great success from the start. The purpose held in view was the furnishing of a supply of fuel, fence posts, etc., to the settlers, the protection from storms of their dwellings and the beautification of the general landscape. The best index of the success of

this work is the appreciation shown by the people receiving the benefit from it. This has expressed itself in a continually growing demand for the nursery stock. The extent of this demand led the department last year to decide on the establishment of a nursery at Saskatoon to supplement that now established at Indian Head. The work of putting the nursery under way is being undertaken this year.

Statistics and Laboratory.

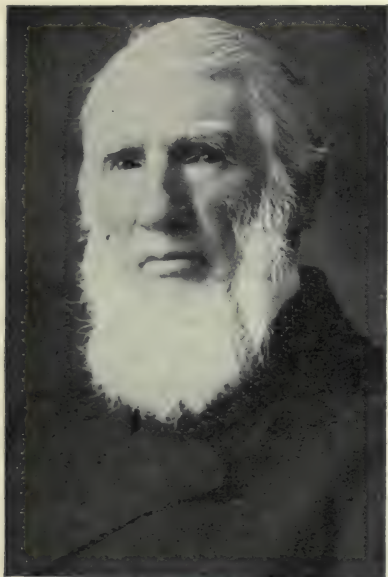
In connection with the head office at Ottawa, various lines of work are being undertaken and developed, with the idea of bringing the general problem of forestry before the public and of increasing the knowledge of those directly using forest products in regard to the material they are handling.

A technical forester will from now on devote his whole time to the gathering and preparing for publication of the existing knowledge in regard to the forest resources of the country. This information will also be made available for use in the public lectures given at frequent intervals by officers of the department. The information used in the past as a basis for these lectures has, to too great an extent, been based on the experience and data of other countries. It is intended in future to use to a much larger extent the knowledge acquired in this country itself.

For the benefit of the industries using wood in various forms, statistics of the quantity and value of the wood so used are compiled annually. The most detailed work in this connection is in regard to the use of wood in its highest manufactured form by factories of various sorts. This work is being undertaken by Provinces. A report will shortly be published, giving the data gathered in Ontario in 1912, and a report with regard to the Maritime Provinces is in an advanced state of preparation. The Province of Quebec will next receive attention, and later the western Provinces.

A most important development of this work has been the establishment, through the co-operation of McGill University, of a wood-products laboratory. In this laboratory there will be investigated the strength and other properties of the various woods of industrial importance. One of the large problems that will engage its early attention will be the methods of manufacturing wood-pulp for paper and the suitability of various species of wood for such manufacture.

Another department recently inaugurated is the making of studies and the giving of assistance in relation to the management of privately owned woodlands, especially the smaller areas in settled districts. The Forestry Branch is continually in receipt of requests from the owners of such



MR. JOHN R. BOOTH.

On Saturday, April 5, Mr. John R. Booth, of Ottawa, celebrated his eighty-sixth birthday, in good health and in active control of his great lumber, paper and other interests. Mr. Booth was one of the charter members of the Canadian Forestry Association, and was for some years a director, which office is now filled by his son, Mr. C. Jackson Booth. At the 1906 Convention in Ottawa, Mr. Booth put at the disposal of the committee of arrangements a special train which took the delegates out over the Canada Atlantic Railway (Mr. Booth's line) to see the operations on one of his limits in the Madawaska district. Mr. Booth has always been a strong supporter of forest conservation.

tracts for information and advice. The supervision of the management of a small tract owned by the Y.M.C.A. near Lake Couchiching (Ontario) has been undertaken by the Forestry Branch. It will be the object of this management to maintain the permanent continuity of forest cover, and at the same time procure for the owners of the tract the greatest possible benefit and revenue. In connection with this work studies will be made of the rate of growth and suitability for importation into this country of various exotic trees that might prove of value to the owners of small tracts of woodlands who desire to make the most of their woodlots and plantations.

The outline given of these lines of work (still merely in their infancy) will make clear the necessity for large increases in staff. An especial difficulty has been experienced in securing the services of men properly trained for the duties of planning and supervising the various activities. The forestry schools of the country are developing men of the right caliber and abilities, but at a rate altogether inadequate. A considerable number of acquisitions of technical men has, however, been made recently, which will allow important development.

Canadian Pulpwood Statistics for 1912.

Figures from the Forthcoming Bulletin of the Dominion Forestry Branch.

A total of 1,846,910 cords of pulpwood were cut in Canada during 1912; of this 866,042 cords were manufactured into pulp in Canadian mills while 980,868 cords were exported in the raw or unmanufactured state. This is an increase of 21.5 per cent over the total cut of 1911—an increase of 28.8 per cent in manufacture of pulp and an increase of 16.6 per cent in export of raw pulpwood.

The average value per cord of pulpwood consumed by Canada's pulp mills decreased from \$6.45 to \$6.02. The total value of pulpwood used in the industry in 1912 was \$5,215,582.

Quebec, Ontario and New Brunswick still head the list of provinces in consumption of pulpwood. British Columbia, however, has increased its consumption by some thirty-four thousand cords bringing it up to fourth place ahead of Nova Scotia. A decrease of 18.6 per cent in consumption is noticed in Ontario during 1912; all other provinces having increased during the year.

The use of balsam fir for pulp manufacture has increased from 17.5 per cent in 1911 to 19 per cent in 1912, and with this there is a decrease in the proportion of spruce from 81.6 per cent to 78.2 per cent. An increase in the proportion of hemlock used is, due to the consumption in British Columbia where over seventeen thousand cords of this material were used in 1912. Western larch was reported for the first time from this Province.

The mechanical and sulphite processes still head the list, but the sulphate process used practically for the first time in 1912, was employed in manufacturing over sixty-six thousand cords of pulpwood, putting this process third on the list. This

replaces the soda process, the use of which decreased by 72.9 per cent.

The export of the finished product, wood-pulp, has increased by 34.1 per cent. The proportions of ground wood and chemical pulp remained practically stationary at about 85 and 15 per cent. respectively. In 1911 over 99 per cent. of the export went to the United States. In 1912 only about 63 per cent. was exported to that country, while Great Britain imported almost 37 per cent and Japan entered the market purchasing 1,046 tons of pulp, mostly chemically prepared. China and New Zealand also imported small quantities of Canadian wood-pulp.

Wood-pulp was imported into Canada from the United States, Sweden, Great Britain, Germany and Austria-Hungary in 1912, indicating that in some cases these countries can manufacture pulp cheaper than Canada or that they produce some special grade of material desired by Canadian paper makers. The total value of imports of pulp increased by 83.7 per cent in 1912.

Canada still exports over half the pulpwood produced in the country. In fact, the proportion of wood exported in the raw state increased from 55.8 per cent in 1911 to 56.1 per cent in 1912.

New Brunswick and Nova Scotia manufactured less of their pulpwood in 1912 than in 1911, while the proportions in Ontario remained the same. British Columbia was the only Province which reported having manufactured all its pulpwood into pulp in the Province. The effects of legislation restricting the export of raw pulpwood are most evident in Quebec, where 43.5 per cent of the cut of pulpwood was manufactured within the Province in 1912 as opposed to only 38.0 per cent in 1911.

Regulating Cutting in British Columbia

A. V. Gilbert, B. C. Forest Service, Tête Jaune Cache, B.C.

It has occurred to me that some of the readers of the Canadian Forestry Journal would be interested to hear of the success which has attended the efforts of the recently organized Forest Branch of British Columbia with regard to the regulation of the cutting of timber on Crown

lands for construction purposes being carried on by the Grand Trunk Pacific Railway Company.

The proper clearing and burning of debris on the rightofway, which is under the supervision of the divisional fire-warden of each district, has been carefully looked after, but as this has always been insisted upon there is little difficulty in having it carried out. On the other hand an innovation, which proved a slight stumbling-block at first, was the demand of the Forest Branch that where any timber for construction purposes is being taken out the tops shall be lopped and all brush shall be piled according to the directions of the local forest officer, who will also supervise the burning of this debris at the proper time, this latter expense to be borne by the Government. This is, I believe, the first instance in Canada, where railway contractors have been required to adopt such measures.

The most extensive cutting being done in any localized centres is in connection with the taking out of ties and bridge timber. The fact that this work is let by contract would explain why some slight difficulty was encountered at first by the forest officers.

When the railway company wishes to cut on any certain piece of land they must first apply to the local forest officer who examines this land and reports to the head office at Victoria, where the application is finally passed upon, and if accepted a permit to cut is granted. On each permit the following instructions are given special emphasis: 'All tops shall be lopped and piled with all other slash and debris resulting from logging operations in compact piles, and shall be so piled that when burned no damage will result to the remaining standing timber.' The railway company did not mention this specifically in the contracts which they let but the contracts stated that all cutting be done according to the directions of the forest officers. Naturally any of the contractors who did not inform themselves as to the regulations of the British Columbia Forest Branch were a little loath to undertake work which meant a direct loss to their profits. As the contractor usually sub-lets the contract and probably the sub-contractor in turn sub-lets it again, it gave more opportunity for misunderstandings to occur and in this way some delay occurred in the starting of the brush piling. However on the matter being taken up with the rail-



MR. CARL RIORDON.

Mr. Carl Riordon, Vice-President and Managing Director of the Riordon Pulp and Paper Co., has been elected President of the newly formed Canadian Pulp and Paper Association. Mr. Riordon has been for many years a member of the Canadian Forestry Association, and up till this year was a Director when he resigned, feeling that some person who could give more time should be elected. Mr. Riordon has taken a deep interest in the cause of forest conservation. He read a valuable paper at the 1909 Convention, and it is confidently expected that the Association will have the advantage of his counsel on future occasions.

way company by the Minister of Lands, the Hon. W. R. Ross, who is actively interested in carrying out the policy of the Forest Branch, the contractors were instructed to see that all demands of the forest officers were carried out, and at the present time the work of piling the brush is being carried on by all the contractors, without exception, in this district.

The contractors endeavoured to get the tie-makers to pile the brush and offered them one cent a tie more than they were getting, but they would not accept this, and consequently a special crew had to be engaged to do the work. Of course the work can be done cheapest by the tie-maker, and the statement has often been advanced that the brush can be piled for

one cent a tie if done by the tie-maker, but a great deal depends on the nature of the timber and the country. It is very doubtful if the work can be done for that figure in this valley where the timber is mostly spruce and runs very much to brush. On one permit the brush has been piled for one and a half cents a tie, but in this case four tie-makers took the contract in partnership and they are doing most of the brush piling themselves, which fact would lead one to believe that they can do the work much cheaper than it can be done by a contractor who is hiring day labor. As a matter of fact, it is very difficult to secure laborers for this work at all because it is rather unpleasant when there is much snow in the bush and the men who do take it up seem rather inefficient.

Records and Care of Plantations in Foreign Countries.

Geo. H. Retan, Forester, Pennsylvania Dept. of Forestry, Mont Alto, Penn.

The following notes of an address by Mr. Retan before a gathering of Pennsylvania foresters were sent by him at the request of the Editor of the Canadian Forestry Journal. It is hoped to have other articles from the pen of Mr. Retan in the near future.

Records of plantations, as plantations, do not exist. On the contrary records are continuous for every unit of management. They not only cover the present plantations on the ground but give the complete history of the last stand occupying the site. These records are complete in every feature, typical of the scientific German character.

Records are of two kinds, written and cartographical. The two show practically the same thing, the written covering a longer period of time. One map may show geological characteristics and quality of the soil, age and species of the stand, units of management and even silvicultural plans. The written record adds as to the plantation in particular, a minute history of every expense, loss, treatment and results. There is never a second failure from the same reason.

Protection in Germany is the result of several co-operating forces. The chief of these in their order of importance seem to be:

Continued period of high relative humidity.

An adequate force.

A large permanent labor force.

A completely developed transportation system.

The sense of individual ownership.

The utilization of the litter.

In the Black forest, Odenwald, Bavarian Highlands, and Rhine, there were few days during the whole fall when a fire would have been possible. From what I could learn it was not an exceptional fall, nor was the actual rainfall heavy. The air seemed always damp and foggy or actually misty. To this cause may be attributed the success of the plantations of the Pacific Coast species in Germany.

Then we have the important fact that every inhabitant, peasant or prince, has a more or less concrete sense of ownership in the forest. Whether he is merely entitled to a yearly amount of firewood free or whether he is in a community whose taxes are greatly lessened because of the communal forest, he has the individual sense of 'pocketbook' interest which impels him to protect his own property. What a difference this alone would make in Pennsylvania!

As to the roads, praise cannot be too great. Whether on the sands of the Rhine Valley where roads cost little or in the Saxon Erzgebirge, fully as rocky as the mountains of Central Pennsylvania, there is present the same intensity of the road system. At Tharandt where Cotta in 1811

made the first scientific German working plans, they are now revising these plans in entirety in order to develop a more economic road system. Consciously or unconsciously German protection is about summarized in the one word Roads.

Plantations are universally protected against man. These are the only woods that the tourist is not allowed to enter. Everywhere is the sign 'walking forbidden.'

Protection from erosion is provided for in plantations on steep hillsides by terraces. These may be only a single or double furrow made with a plow or the more elaborate terraces of the French reforestation work.

In the shore plantations generally wind-breaks are erected or grasses planted until the trees are well started. In the Rhine valley small cutting areas guard against the drifting sand.

Sufficient shade for plantations is provided for in the manner of cutting. This may be the strip system, a strip of plantation alternating with a strip of highwood or in groups of various sizes adapted to the species planted. One form of light protection was most interesting to us here in Pennsylvania. This was in the transformation of coppice into highforest. In this all the stump sprouts but one were cut and the one left was the strongest. This one sprout absorbs the whole energy of the stump to prevent more suckers and at the same time protects the plantation. After the plantation is once established these single sprouts are cut out. This method proved far superior to clear cutting where the sprouts must be cut back once or twice at an expense equalling the first cost of the plantation. This method is especially to be recommended in frosty situations with species sensitive to late or early frosts.

Protection against wild animals proves a considerable source of expense, due especially to their hunting laws and game protection. Against the deer fencing, either wooden or wire, is used. In spruce plantations the terminal shoots of every tree are tarred in some sections. White pine seedlings at Bretton were bound with lead strips to prevent barking by rodents.

Protection against insects and fungi is too large a subject to speak of specifically. There is a careful watch kept for the diseased tree and it is removed at once and precautions taken where an epidemic is feared. Whole plantations are sometimes sprayed with Bordeaux mixture where shedding disease of the Scotch pine is present. Careful watch is kept in spruce and pine plantations for the honey fungus, etc. Plantations are left sheltered for five years before the adjoining overwood is cut out. It is claimed that after a five

year interval the usual crop of 'children's diseases' has been run through with and an adjoining plantation will not be infected.

But the one measure that is claimed to be most effective for protection is bird protection. Birds are offered every inducement to remain in the woods as bird houses, concrete watering and bathing tubs, feed huts for winter, feed when the snow makes their living precarious, etc.



MR. T. W. DWIGHT, B. Sc. F.
Assistant Director of Forestry.

DURABILITY OF TIES.

The average life of untreated ties as reported by the steam roads is as follows: cedar, nine years; tamarack, eight years; hemlock, seven years; Douglas fir, seven years; jack pine, six years; spruce, six years. As recent statistics bear evidence, cedar is the species principally used, because of its durability, but the supply of cedar is rapidly becoming exhausted. Unless preservative treatment of ties is introduced, the short-lived species will have to be used untreated, which, on account of the necessary frequent renewal, will increase the cost of mileage maintenance. If treated ties were used, which would cost thirty cents extra per tie for creosoting and equipping with tie plates, the inferior species, which are very plentiful and cheap in Canada, could be used with economy. With such a treatment these woods would last at least fifteen years, and if protected from wear would probably last much longer.

The Work of a Forest Engineer.

By A. H. D. Ross, M.A., M.F., Lecturer in Forestry, University of Toronto.

In the present stage of our civilization, wood, in one form or another, is an absolute necessity. Our people use enormous quantities of it for all sorts of purposes.

During the present century Canada's population is sure to reach the eighty million mark. Meanwhile enormous quantities of wood will be required for the construction of the railways needed to open up the country in advance of settlement and to build homes for the people. The myth that Canada possesses inexhaustible supplies of timber is now pretty well exploded. The fact of the matter is that there is far less timber in Canada than many Canadians are willing to admit, and much of it is of an inferior quality. The growing scarcity of timber has led to a steady rise in prices during the last fifteen years, and the end is not yet. In eastern Canada the wholesale prices of pine and spruce lumber have advanced between fifty and sixty per cent. This is partly due to the growing scarcity of timber and the increased cost of logging, and partly to the enormous quantities of timber exported to other countries, but mainly to a knowledge of the limited quantity still available.

The growing scarcity of timber in other countries than this and the constantly improving transportation between the different countries of the whole civilized world warrant us in predicting the establishment of world prices for timber.

Thus, if Canadians are to avert the evils which have overtaken other lands where the forest resources have been allowed to diminish or approach the vanishing point, they must adopt a general and far-reaching policy for the management of their timber lands. Such a policy must be based upon an adequate, scientific and practical grasp of the whole situation. Hence there has arisen the necessity for a class of men with both a training of a highly technical nature and a clear conception of things which at first sight do not seem to be related, even in the remotest degree. These men must clearly understand the relationships that exist between the different parts of their work. Otherwise, they will make many serious blunders and bring their profession into disrepute.

A forester is not a mere botanist let loose to air his theories at the expense of others; neither is he a mere 'lumber-

jack', fire-ranger, sportsman, entomologist, pathologist, dendrologist, silviculturist, or any other kind of 'ist'. He should be all of these rolled into one and must clearly understand all these phases of the general problem of preserving his property and increasing its productive capacity. The profession of forestry touches life at many points, and cannot safely be entrusted to half-educated men. It has constantly to deal with questions of tremendous magnitude and importance, and its devotees are engaged in a profession of which they may well be proud.

The professional forester does not aim to oppose Nature, but to assist her—to make use of the naturally favourable conditions existing in any given locality and to hold in check the unfavourable ones. He exercises his skill in encouraging the growth of the most suitable species, and modifies their growth so as to produce the most valuable timber in the shortest space of time. All this must be done without diminishing the value of the soil for the production of future crops.

Just as the agriculturist is engaged in the production of food crops, so the forester is engaged in the production of wood crops. Each carries on his business for the practical purpose of producing a revenue. Each must protect his crop from insect ravages, fungus diseases, fire, trespass, etc. Each of them should guard against the impoverishment of the soil, and constantly aim to increase its value. In each case, the land is the principal capital, and any part of it either wholly non-productive or turned to a less profitable use than it might be represents so much wasted capital.

Twenty years ago, the science of forestry was regarded as an abstract and debatable theory, and all knowledge of it was confined to a few experts and enthusiasts whose views were regarded as of doubtful value. Today the most intelligent and public-spirited members of the community regard the treatment of forest resources according to well established forestry principles as a vital and urgent economic problem. From what has already been said, it is surely evident that the professional forester should be thoroughly trained in all the branches of his work if he is to be of the highest service to the state.

Forestry Schools.

The recognition of this fact has led to the establishment of a number of forestry schools at leading educational centres on this continent. In Canada alone we now have three such schools. In October, 1907, the Faculty of Forestry in the University of Toronto was established with two instructors in forestry and eight students. The number of students is now 47 and the teaching staff in forestry subjects has been increased to four. In the University of New Brunswick, a Department of Forestry was established in October, 1908 with one professor and ten students, and at Laval University, Quebec, a Department of Forestry was established in 1910 with two professors and fifteen students.

Preliminary Training.

The preliminary training for this profession consists of a four year undergraduate course, supplemented with considerable practical experience in the field. A brief outline of the course at the University of Toronto may be of interest. The first two years work are mainly along the line of an Arts course with Science options, the last two years being almost entirely devoted to technical forestry subjects. There is also a six year combination course, whereby a man gets both his Arts and his Forestry degree. There are now six students taking this course, and it is expected that the proportion of men taking it will increase as time goes on.

In what may be described as the technical part of the regular four-year undergraduate and the six-year combination courses, the students get a thorough drill in elementary phanerogamic and cryptogamic botany, vegetable physiology, physics, chemistry, mineralogy, geology and soil physics. More specialized courses are given in forest botany, biological dendrology, economic forest entomology, and the fungus diseases of trees. The synoptical course takes a general survey of the whole field of forestry science; after which forest geography and the history of forestry are dealt with for the express purpose of letting the men know what is going on in different parts of the forestry world and enlarging their outlook.

Then comes a very complete course in silviculture, or the art of growing wood crops to the best advantage; followed by briefer courses in forest protection, forest surveying, forest mensuration, forest valuation, forest utilization, timber physics and wood technology, forest regulation, forest finance, forest management and the preparation of working plans.

Some of the special lecture courses are on prairie planting and farm forestry, the administration of Canadian timber limits, business methods of the lumber trade, for-

est law, wood preservation, fish culture and game preservation.

From this outline of his academic training, it is evident that the young man who completes his course will have a pretty clear view of the whole field of forestry science.

As regards the field training, there is only one way to acquire, it, namely, by experience in the woods. No amount of reading or theorizing will give this experience. It must be learned at first hand, but there can be scarcely any doubt that the men who go into the woods with the broad general outlook that a thorough



MR. A. H. D. ROSS, M.F.

academic training gives them will acquire this kind of knowledge very quickly, and, what is of more importance, know how to apply it in cases where men without similar training would utterly fail, and thus prove themselves thoroughly unpractical.

Before being granted the degree of Forest Engineer, candidates must give at least three years' satisfactory service in the field and present a thesis upon some practical subject prescribed by the Faculty.

The Forest Engineer's Problems.

It will therefore be in order for us to examine some of the problems that constantly present themselves to the men in the field, and how they grapple with them.

In a young and undeveloped country like this, a considerable portion of the forester's time is taken up with surveying and mapping. At times a rough reconnaissance survey is all that is needed. At others it is necessary to make a topographic map of the region, showing by what routes the timber can be most easily removed. If the property is to be placed under permanent management, it will be necessary to make a complete forest survey of it. This will include (1) A more or less accurate plane and topographic survey, (2) An estimate of the amount

of timber, (3) A determination of the rate of growth of the timber, (4) A study of the conditions of light, moisture, soil and other factors influencing the present and future conditions of the forest crop and (5) The location of permanent roads, dams, bridges and other structures needed for the removal of the timber.

In a rough way, every logger is his own topographer, and has acquired his knowledge by cruising, but unfortunately it is often very inaccurate, is easily forgotten, and cannot be transferred to his successor, who has to acquire his knowledge of the locality all over again. With a good topographic and timber map of the tract, all this information can be kept in the head office, where it is of very great value. In most cases contours can be obtained with sufficient accuracy by the use of an aneroid barometer. A glance at the contour map will show the probable location of roads needed, and thus save much time in the field. On the timber map will be shown the location and extent of the fellings and the progress of the work as the tract is brought under management. In short, the maps represent in miniature the lay of the land and the woods operations being carried on from one year to another.

In regions where the commercial timbers are good floaters, horse lumbering and the driving of streams in flood time will be largely employed and the young forester will have ample scope for his engineering skill in the laying out of ice roads, the building of dams, slides, tugs, alligators, etc., for the movement of the timber.

The Building of Roads.

When it is pointed out that about seventy per cent of the cost of producing lumber is spent in the woods, it will at once be seen that the first duty of the forester is to provide cheap and efficient means for the removal of his crop. This crop is both bulky and heavy, and gives him ample scope for the exercise of his ingenuity in adapting means to ends. Very frequently he cannot secure the services of civil or mechanical engineers and has to work out his own problems on the spot. His ability to do so at once makes him a valuable man to his employers.

The object of any road is to provide a means of transportation from one point to another with the least expenditure of power and money. The main principles governing the location and construction of the road are: (1) To secure as easy grades as possible, (2) have direct routes, (3) avoid all unnecessary ascents and descents, (4) place the centre line so the cost of construction will be a minimum, (5) cross obstacles like ravines, etc., as

nearly at right angles as possible, (6) cross ridges through the lowest pass to be found.

When good maps can be had of the district, the task of locating the road is a comparatively simple one. Usually, however, no map at all is to be had, in which case the forester must make a reconnaissance survey of the whole belt of country between the controlling points, to discover the best route. Mountainous country often appears much worse than it really is for the building of a road, and rolling country often appears better than it afterwards proves to be. The main thing is to have 'an eye for country' and not waste time over an unnecessary degree of accuracy in the preliminary work. Usually the general location of a large part of a route is self-evident, or may be determined after a very brief examination. In most cases direction is determined with sufficient accuracy by means of a small magnetic compass, distance by pacing, and differences in elevation by means of an aneroid barometer. A good pair of field glasses will save much unnecessary travel.

The first steam logging railroad was built in Michigan, in 1876, by Mr. W. S. Gerrish, who was called a hare-brained enthusiast for proposing such a scheme. It proved such a success that a few years later there were 720 miles of such roads in the state. Now the mileage of logging railroads in North America is computed at over 25,000 miles. Their general use has led to the designing of locomotives and cars most suitable for that class of work. To secure cheap construction, cuts and fills are avoided as much as possible and the engines must be able to climb heavy grades and round sharp curves. This has led to the construction of shay-gear and other types.

The difficulty of location and the amount of care demanded will depend altogether upon the character of the country and the grades required. If in the same valley, or along the bank of a river or lake too large to be bridged, the location is self-evident. If the river is smaller, has sharp bends and variable banks, and is easily bridged, both banks should be carefully examined to determine the best location and crossing points. The proper choice of bridge sites is an important matter. Where possible, the bridge should be placed at right angles to the current, be as short as possible, have good foundations, avoid bends in the stream and be placed between stable banks so as to secure a permanent concentration of the waters in the same bed. Frequently this means the subordination of the line of the road to the most suitable crossing point. When the controlling points lie in

different valleys the location of the line is often a very difficult matter, especially when there are two or more possible routes. Usually, however, the location will include the lowest summits and highest low points, such as river-crossings, etc. Hence the elevations of summits and sags and the distances between them, together with the constructive character of the country, must be determined. Low ruling grades are always desirable, whether the road is to be for sleighs, wagons, traction engines or locomotives. Where there is a prospect of the road being sold later on as a link in a railway system, it is well to spend considerable time and money in securing the best possible location. A few hundred dollars spent on preliminary surveys will in such cases be repaid an hundredfold. For such work as this it will, of course, be necessary to use transit, level and stadia rod.

Logging by Cable.

In the large timber of the Pacific coast and the cypress swamps of the South the long logs are hauled in to the railway or other landing place by bull donkey engines. A light line pulls out the heavy cable to be attached to the log, or string of logs, which are then drawn in by the winding-in of the heavy cable. Often each log is capped by a steel cone so it will come more easily around obstructions and through soft mud. In the case of cypress, the logs are generally snaked out to canals along which they are then rafted — the bull donkey being mounted on a scow which is anchored or snubbed at convenient points along the canal. Where a cableway skidder is used, the head spar is the mast of the scow and the tail tree off in the swamp a convenient distance.

In the more mountainous districts, the cableway skidder is an exceedingly useful device for the bringing in of logs, pulpwood, tan bark, etc., to the railway or other road at a minimum cost. In many cases it is the only practical method of yarding the timber at all; as for example, where it is in 'pot holes', across deep ravines, or up slopes where the construction or cost of roads or slides would be prohibitive. Even in country where it is easy to construct railways, the cableway skidder is coming largely into use. The principal objection to it, from the forester's standpoint, is the damage done to the young trees by the swaying and dragging of the logs as they are being hauled in; but it is an open question whether the extra growing space due to the non-construction of roads and the saving in cost of building and maintaining them do not balance the injury done to the young crop.

Loaders.

For the loading of logs on cars, several devices are in use. The Barnhart loader moves on a pivot in all directions and will load from 600 to 800 logs a day, provided they are within 100 feet of the track. As each car is loaded, the machine pulls itself along rails laid on the cars and loads the next one. In the Decker Loader, the empty cars are pulled forward beneath the loader. In other cases a turn of cable round the log on a raised platform rolls it onto the car as the cable is tightened up by means of a drum or 'spool.'

From what has been said, it will be seen that every forester should be a first-class logger and be constantly on the alert to utilize the engineering skill which has been developed in the logging business. Not only this, but he should be on the lookout for new methods, which usually means the adaptation of old ones to new problems.

Other Problems.

Besides removing the timber in as cheap a manner as possible, the forester must also consider the future condition of the property. The ordinary logger is a mere exploiter, who has no concern whatever for the future, and is generally frank enough to tell you so. The forester, on the other hand, is very much concerned with the problem of leaving the tract in the best possible condition for the growth of the timber left standing and for its removal when mature. This generally means the laying out of a permanent system of roads, the disposal of the debris incident to lumbering and the suppression of undesirable trees. In other words, he must practice silviculture, if he is to increase the amount and quality of the timber grown. Herein lies the most important part of his work—work calling for a full knowledge of his subject and the exercise of rare judgment and skill.

Another phase of the forest engineer's work is to be met with in the management of protection forests, which do so much to equalize the stream-flow. With the transformation of waterpower into electric energy all over this continent it will at once be recognized that the maintenance of as even a flow as possible is a matter of very great importance.

In southern Alberta there is also a field for the forester with some knowledge of irrigation engineering problems. In my opinion, every forester should know how to gage a stream quite as well as the ordinary civil engineer. This knowledge would enable him to bring in accurate information long before it would be obtained in the ordinary course of events.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

FORESTRY BRANCH STAFF.

Elsewhere in this issue is given an outline of the work being undertaken by the Forestry Branch of the Department of the Interior. The men on whom rests the responsibility for carrying out this work are mostly forest engineers who have received technical training in the various forest schools. The positions assigned to these men, both old and new appointees, with the forest school and year of graduation of the new men, are given hereunder:—

Head Office (Ottawa).

Director of Forestry—R. H. Campbell.

Assistant Director—T. W. Dwight.

In charge of Statistics—R. G. Lewis.

In charge of Surveys—H. Claughton Wallin.

In charge of Woodlots—B. R. Morton.

In charge of Information—G. E. Bothwell (Tor., '13).

In charge of Library and Publications—F. W. H. Jacombe.

Forest Reserve Administration.

B. C. Inspection District, Headquarters, Kamloops, B.C.

District Inspector—D. R. Cameron.

Assistant Inspector—W. L. Scandrett.

Forest Assistants—A. C. Parlow (Toronto, '13) and K. G. Wallenstein.

Alberta Inspection District, Headquarters, Calgary, Alta.

District Inspector—W. N. Millar.

Supervisor Crowsnest Forest—R. M. Brown.

Supervisor Bow River Forest—F. G. Edgar.

Supervisor Brazeau Forest—L. C. Tilt.

Supervisor Cypress Hills Reserve—F. McVickar.

Forest Assistants—S. H. Clark (Toronto, '13), J. P. Alexander (Tor., '13), C. H. Nye (Biltmore, '13), E. C. Bleecker (Harvard, '13).

Saskatchewan Inspection District, Headquarters, Prince Albert, Sask.

District Inspector—G. A. Gutesch.

Forest Assistants—E. H. Roberts (formerly with the Laurentide Co.), L. Stevenson (O.A.C.), R. L. Shives (U.N.B., '13).

Manitoba Inspection District, Headquarters, Winnipeg, Man.

District Inspector—F. K. Herchmer.

Forest Assistants—J. R. Dickson, C. Musante (Biltmore, '12), F. S. Newman (Tor., '13), F. D. Brown (from D. & H. R. forest department), G. Tunstell (Tor., '13).

Inspection of Fire Ranging.

Inspector—E. H. Finlayson, headquarters, Ottawa.

The appointment of seven permanent Chief Fire Rangers has recently been secured, and this will put the work on a much more permanent basis than heretofore.

Division of Tree Planting.

Chief—N. M. Ross, headquarters, Indian Head, Sask.

Assistant—S. S. Sadler.

A considerable number of men will be employed temporarily in connection with all these departments of the work.

RETURNS TO CANADA.

Many old friends in the Forestry Branch and elsewhere in Canada will welcome the return to this country of G. A. Gutesch, who has recently been appointed District Inspector of Forest Reserves for Saskatchewan. Mr. Gutesch returns to the Canadian service after several years spent as Inspector in the Forest Service of the U. S. Indian Department, where he has had charge of the forests belonging to that department in six of the southwestern states of the Union. After such training, great things are expected of him in his new capacity.

WHAT THE ASSOCIATION STANDS FOR.

Mr. R. H. Campbell, Dominion Director of Forestry, was present at the inaugural meeting of the Canadian Pulp and Paper Association in Toronto recently, and besides dealing with the work in his own Branch, spoke by request on the objects of the Canadian Forestry Association, of which he was for eight years Secretary. In this part of his address he said that two of the things for which the Association stood were: First, the protection of

the forests from fire by providing a fire patrol of efficient men, well organized and well equipped; and, second, the inspection of the public lands and the separation of the agricultural from the non-agricultural lands, the latter being included in reservations and kept permanently for the production of timber. These two objects the Association has kept before the public by all the means of education which are available. It has also made representations to the Government for the improvement of fire legislation, which has done considerable towards perfecting the statutory authority for the protection of the forests. No matter how efficient the legislation is, however, it needs to be backed up by a strong public opinion, and the Association, which is not a Government institution, but a voluntary institution to whose membership all the members of the Pulp and Paper Association will be welcome, is doing a great deal to educate the public and form such a necessary background of public support.'

Paper journals continue to announce experiments to find materials for paper-making to take the place of wood. Straw, bamboo, sugar cane waste, cornstalks are all considered, but in every case they are less economical than wood. These things point to the importance of preserving our forests which are daily growing more valuable.

Teacher: Johnny, name the most useful trees.'

Johnny: 'Walnut tree, apple tree and axle-tree.'

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Write for catalog of Biltmore Forest School, addressing—

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Candidates for advanced standing may take examinations in any subject but are required in addition to present evidence of a specified amount of work done in the field or laboratory.

The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

For further information address

JAMES W. TOUHEY, Director
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CONTENTS:

Page.

Winnipeg Convention	65
The Late Herbert M. Price	67
Progress in Forestry	69
Forests and Snowslides	70
Eastern Foresters	71
How to Prevent Floods	71
Toronto Students in Norfolk	73
An Early Conservationist	74
What's Doing in the Rockies	74

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WINNIPEG CONVENTION.

The fifteenth convention of the Canadian Forestry Association for the presentation of addresses and papers and the discussion of forestry matters will be held in Winnipeg, July 7, 8 and 9, 1913. Problems of the greatest importance to the whole of Canada will be discussed. While special attention will be given to prairie conditions the program will bear testimony to the national character of the work in that the problems now pressing for solution in both East and West will be carefully considered. Assurances have been received from the Dominion and nearly all the Provinces that they will be officially represented, and a number of the men in the United States best qualified to give assistance in regard to our conditions have already signified their attention of coming to Winnipeg.

While the exact details of the program cannot be outlined for some little time it is expected that the proceedings will be opened by His Honor the Lieutenant Governor on Monday evening, July 7, at an official reception in which the delegates will be welcomed by the representatives of the Government of Manitoba, City of Winnipeg etc. The following two days will be devoted to the work of the Convention along with such entertainment features as shall be arranged.

The public sessions will be held in one of the halls of the Winnipeg Industrial Bureau, which is well adapted for handling conventions of all kinds, being centrally located and having the necessary offices, committee

rooms, etc. In this connection it is expected there will be some exhibits of interest to all interested in trees, whether as lumbermen or as the growers of shelter belts and wood lots.

This is the first time the Canadian Forestry Association has ever held its convention in Winnipeg, which will result in there being brought up for the first time a number of problems which relate to the great central part of Canada. These will include that of the protection and perpetuation of the great forests of western Ontario, and northern Manitoba, Saskatchewan and Alberta; the best methods of handling the forest reserves of Manitoba and their possibilities in future timber production and the supply of fence posts, poles and cordwood for the settlers; the necessary thing to do in regard to getting under timber the sand lands which will never produce any other profitable crop but trees; the rate of growth in the central parts of Canada as a basis for deciding the possibility of the economical growing of trees by farmers for fuel and building purposes, and also the possibility of re-foresting reserves and cut over lands; and the practicability of using hedges and living fences. Along with all these will go the discussion of the value of forests on the uplands as wind breaks, sources of stream supply and as cover for insectivorous birds.

To discuss these questions men who have made these subjects a life study in all the eastern provinces, (but particularly in Ontario and Quebec) and in British Columbia have promised to attend. As representing central Canada there will be the officers of the Dominion Forestry Branch and the representatives of the three prairie provinces. To link this up with the wider knowledge obtained under similar conditions there has been secured the attendance of federal and state forest officers in that part of the United States contiguous to central Canada. Through the whole Convention the aim will be to make all papers and discussions serve the most useful pur-

pose, and to this end they will be as practical as possible. Representative lumbermen, agriculturists, railway officials, business men and bankers will show how vitally interested the whole community is in the handling of our forest resources in a rational way which will permit their best use not only for the present but for all time to come. The insect menace has in the last three years been brought to the attention of Canadians, and gentlemen will be present who will give the very latest information on this danger and what can be done to avert it.

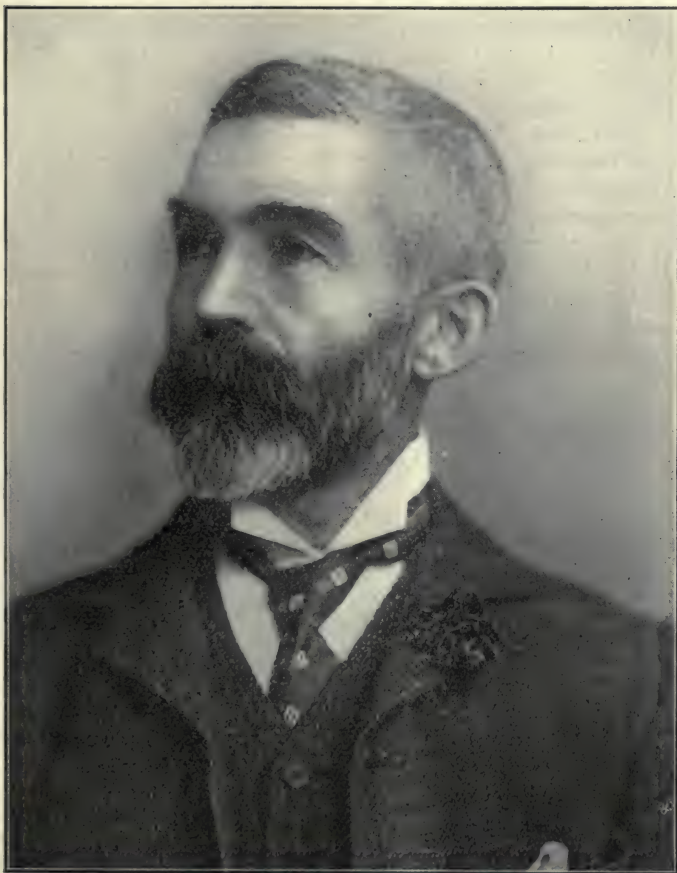
From present indications it appears that this will be one of the very best conventions ever held under the auspices of the Association. There is a strong local committee which is co-operating with the Directors of the Canadian Forestry Association to make the meeting in every way successful.

THE CONVENTION CITY.

Winnipeg is in many respects an ideal convention city. In rapidity of growth and in the handsome character of the city and suburbs it is one of the marvels of the continent. It is seen at its best in summer, and delegates will be able to attend the Winnipeg Exhibition, which opens on the closing day of the Convention, and also to see the early part of the harvest on the far-famed prairies. The Convention tickets being good up till July 24, delegates will have an opportunity to run out through the country. At this season of the year there are always a number of cheap rate excursions to different points, of which advantage may be taken. While the hotels will be occupied by Exhibition visitors during the following week, it is expected that there will be little difficulty in all delegates securing good accommodation at this time. A list of the leading hotels with their rates is given below. The entertainment features of the Convention will likely be of an outdoor character in which all attending may participate.

As the capital of Manitoba and the third largest city in Canada Winnipeg has many important institutions and other attractions. It is the central point of three great trans-continental railway systems with their immense terminals and workshops. Of particular interest to the visitor are the Provincial Parliament Buildings, the University of Manitoba, Manitoba Medical School,

(Concluded on page 78)



The Late Herbert M. Price.

Sudden Death of a Director of the Canadian Forestry Association.

Members of the Canadian Forestry Association and friends of conservation throughout Canada will learn with the keenest regret of the death on April 29 of Mr. Herbert M. Price at his residence Montmorency Falls,

Quebec. Mr. Price was attacked with pneumonia while on a business trip to New York last autumn, and while he appeared to rally for a time this resulted in his death.

He was born at Ross, Hereford-

shire England, on August 21, 1847, and was consequently in his sixty-sixth year. On first coming to Canada as a young man he was connected with banking and was accountant of the Quebec Branch of the Bank of British North America, and later the manager of the Merchants Bank in that city. About twenty-five years ago, severing his connection with banking he went into the pulp and lumber business, at first in connection with the extensive interests of the late Mr. G. B. Hall who had limits and mills in several parts of the Province and he continued to develop this business. Of late years he was identified with a number of important affairs being amongst other things a director of the Quebec Bridge Co., Lake Superior Corporation, Canadian Electric Light Co., Quebec Auditorium, Montmorency Cotton Mills, Co., Riverside Manufacturing Co., Sherbrooke Lumber Co., Quebec Woodpulp Association. He was also on the Senate of Bishop's College, Lennoxville, and was for a time Mayor of Montmorency.

He married in 1877 the daughter of the late G. B. Hall of Montmorency Falls. Mrs. Price died in 1907. There are now left to mourn his loss two daughters, Mrs. J. Hamet Dunn, London, England, and Mrs. Jamieson, Halifax, and one son Mr. A. Bertram Price of Montmorency Falls. Mr. W. C. J. Hall is a brother-in-law and Mrs. Fred. Peters of Quebec is a sister-in-law. One son, Lawrence, a most promising young engineer was killed in a mining accident in 1909, from the shock of which tragedy Mr. Price never fully recovered.

At their home, 'The Cottage,'

Montmorency Falls, Mr. and Mrs. Price entertained many of the most prominent people in Canada and the United States, and also some of the foremost people from the British Isles. 'The Cottage' is noted for its magnificent old fashioned garden in which Mr. Price took keen delight. It was a source of great happiness to him that while Their Royal Highnesses the Duke and Duchess of Connaught and the Princess Patricia were in residence at Quebec last summer they spent many pleasant hours in this famous garden.

Mr. Price was always an enthusiast on the subject of forest conservation and one of the earliest members of the Canadian Forestry Association. He was the President of the Association in 1908 on the occasion of the Convention in the City of Montreal. There were several burning issues in the air at that time of a political nature which were indirectly related to forestry and which some with good reason feared would result in wrangling and ill feeling. The matter looked decidedly serious, but through the firmness and tact of the presiding officer the difficulty was successfully surmounted.

With the passing of Mr. Price another gap is made in the line of the Old Guard of promoters and charter members of the Association. The Canadian Forestry Association and the cause of forest conservation loses one of its most rational and most enthusiastic supporters. To his sorrowing family in their hour of bereavement *The Canadian Forestry Journal* desires to convey its deep and heartfelt sympathy.

Progress in Forestry.

Synopsis of Paper read by J. R. Dickson, B.Sc.F., Dominion Forestry Branch before the Manitoba Horticultural and Forestry Association.

In a material sense the support of a nation is its natural resources. It is a trite saying that 'forestry is the parent of industries,' but forestry is such a new thing in Canada that some may still be in doubt as to how large this field is. Forestry is essentially a business proposition, and it is for this reason that it should be undertaken. The chief aim of forest management is to insure the permanency of lumbering and its depending woodworking industries by insuring a perpetual supply of saw logs, and there are a number of auxiliary benefits which would thus be secured. These include regulation of stream flow for domestic use, irrigation, navigation or power pur-

poses; the securing of public revenue; the ameliorating of climatic conditions; the conservation of fish and game; and supplying the people with health-giving playgrounds.

Wood is the corner stone of all modern industrial life. North America is to-day cutting three-quarters of the total lumber production of the world. On this continent the forests are being laid waste by fire and axe three times as fast as nature is renewing them. The market price for all important species has been increasing from 50c to \$1 per thousand feet for the past decade. It now costs about

(Continued on page 76)



Provincial Parliament Buildings, Winnipeg.

Forests and Snowslides.

Mr. Arthur Lakes, Sr., Ymir, B.C.

When much of a theoretical nature is being written and spoken with reference to the influence of forests on snow and water, it is stimulating to receive the first-hand impressions of a man whose many years of practical experience in mining operations has led him to some definite conclusions on the subject.

Mr. Arthur Lakes, Sr., of Ymir, B.C., writing recently to Mr. H. R. MacMillan, Chief Forester of British Columbia, gives a description of a snowslide in the vicinity of the mine in which he is interested.

Says Mr. Lakes:—

'I saw yesterday what seemed to me a striking object lesson in the importance of conserving and preserving growing standing timber and the benefit of the forestry policy in averting or checking great forest fires. The mountain opposite to the Wilcox Mine, above Wild Horse Creek, is smooth-faced, indented here and there by deep furrows or shallow ravines which during last winter were the pathways of small snowslides. Yesterday after a succession of severe and nearly continuous snowstorms which accumulated some six or eight feet of snow on a level, the entire face of the mountain for a space of over half a mile and to a height of a thousand feet above the river slid down bodily in one continuous sheet or snowslide, starting at every point simultaneously as though by preconcerted signal, and cracking off from the snow above, leaving a distinct irregular or crenated line of cliff apparently from five to ten feet high along the zone where the slide originated, strongly resembling an irregular brush fence at a distance. The snow scaled off from the underlying older and harder snow like the coat of an onion and plunged down enveloped in white foam and smoke-like mist, into the river.

BEGAN IN BARE PLACES.

'The remarkable feature, to me, of this slide was the way in which at its starting point it avoided all growing or standing timber. The slide invariably had its inception and origination point in bare places just at the lower edge of the timber—never from within it although the timber occupies V-shaped depressions well adapted for the accumulation of snow.

'During the year before last I noted that none of the numerous individual slides headed from within growing timber areas, but invariably from bare places burned off by the forest fires. If the timber covered the mountain as it did before the fires there would be no snowslides on that mountain and no menace to mining houses or plants. As it is it would be hazardous or impossible, in case ore bodies (believed to exist) were discovered, to mine the ore or to erect buildings.

'This little incident which I doubt not is common enough and which the foresters must often have observed in this country, showed me clearly the protection from snowslides that standing timber affords, especially at their inception and near the summits. No prudent miner would cut off to any extent the timber back of his mining plant on the poor excuse of its being "handy," thereby destroying his best friend and protection from the attack of his worst enemy, the snowslide. At the same time he would, no doubt, clear off a certain space around his mining plant as security against forest fires.

DEADLY TO MINING CAMPS.

'It seems to me that a great forest fire such as those which have swept these mountains, is one of the greatest conceivable misfortunes to a mining camp. It endangers the plant. It destroys necessary timber for future use. It extinguishes the timber protection against snowslides. It even encourages slides, originates them or makes them possible, and seriously affects the water supply.

'The effect of these snowslides is damaging on the water supply. Not only does it demolish our flumes, as in our own case at the Wilcox, but it carries away uselessly a vast amount of snow that should be stored up for gradual use in the spring season. Both lode miners and placer miners realize this. On the other hand, timber left standing gathers the snow and lets the water out gradually—about the time it is most required in the spring and summer, not in useless torrents swept away rapidly in swollen rivers, but quietly and beneficially. I have read of several placer mines in Northern British Columbia being placed *hors de combat* by the sudden departure of the snows and water borne away in unavailable torrents.

'To me the sight of the effects of a great forest fire such as that which swept through these mountains is a most pitiable one. The

only redeeming feature of a forest fire from a mining point of view is that it clears away the brush and timber and thus gives greater opportunity for the prospector to search for and follow up exposed veins of mineral. Otherwise the forest fire apparently misses any law of compensation. It is a dead loss in every way, doing no good to anyone and very great harm. The sight, too, of a grand old tree that after perhaps a century has reached its maturity standing a blackened ruin of stump some six or eight feet in diameter—and simply because John Smith forgot to put out his campfire before leaving for parts unknown—is a sorry sight indeed.

'I noticed last spring that the mountain opposite us was gradually becoming clothed with a low brush of young trees. But how many years will it take to restore that mountain-side to its former forest glory? and how many years will it require to produce a tree comparable in girth and height to those grand old cedars whose huge blackened and charred stumps are crowded along the road?'

EASTERN FORESTERS.

What University of New Brunswick Men are Doing.

Mr. R. B. Miller, Professor of Forestry in the University of New Brunswick, writes in reply to a letter of the editor of *The Canadian Forestry Journal* that the work of the academic year has concluded most satisfactorily and that the prospects are very bright. He encloses the following from one of the daily papers of Fredericton:—

The foresters in the University of New Brunswick are getting positions for the summer and it is hoped the majority will be placed before Encaenia or shortly afterwards at least. Of the seniors, K. R. Macchum takes a position with the C. P. R. Forestry Branch, and H. B. Murray is the only man to go to British Columbia under H. R. MacMillan, Chief Forester. R. K. Shives will go to Prince Albert, Saskatchewan, and in his party as assistant will be H. S. Laughlin, of the junior class. G. P. Melrose of the same class is also with the Dominion Forestry Branch as well as A. M. Gunter and Don A. McDonald. The two latter will be assigned to the Dominion Experimental Farm where they will make studies of growth in the arboretum.

Jack Hipwell, Harry Holman, Frank McGibbon and Cortland Otty, the latter an engineer with some forestry experience, have received positions with the C. P. R.

Forestry Branch, at Calgary, Alberta. All of these are sophomores. C. L. Armstrong and C. R. Townsend of the freshmen have been placed, as well as Sam Weston, '14, with Mr. Reginald R. Bailey, Plaster Rock and will be on the Tobique with Foster Howe and H. C. Belyea, U. N. B. men engaged in cruising for the New Brunswick Land Co. On account of other men getting ready for examinations, five U. N. B. men, some of them foresters, were sent to Nova Scotia for the C. P. R. K. Vavasour, R. D. Jago, A. M. Brewer, Guy Horncastle, and C. E. Maimann, left here April 15th.

The Forestry Department at the U.N.B. is steadily growing in popularity and the usefulness of this science is becoming more generally recognized. The number of students in forestry it is expected will be largely increased next year.

HOW TO PREVENT FLOODS.

The floods which swept through the middle western states were more destructive this year than ever before. Not even the awful Johnstown flood can be said to parallel in loss of life and property the terrible disasters which recently took place. The New York 'Outlook' in 'A Poll of the Press' on the subject of flood prevention in the light of recent experiences returns a verdict which should make forest conservationists more zealous than ever for their cause. The 'Outlook' gives first place to the opinion expressed by the Buffalo 'News.'

Nothing is more familiar in the experience of mankind than that cutting down the forests to an unreasonable extent invariably leads to floods and to erosion of soil, and, generally speaking, to enormous damage to farming country as well as to cities and villages that lie in the path of streams.

Hardly any other lesson in our human experience is more deeply and bitterly written than that of the folly of neglect to preserve a certain proportion of forest lands with a view to security of inhabitants.

Some marvel that in the generations past, say in the early days of the settlement of the Central West, as well as of the eastern part of the United States, there were no such disastrous floods as we have to-day, but it is all accounted for by having the land so cleared that as soon as rain falls or snow melts it immediately goes down grade with the utmost speed into creeks and rivers and begins its work of destruction.

Formerly there was enough of forestry to make a sort of natural reservoir that should hold back the waters. We shall have to reforest the country to a reasonable extent . . .

Hence the first preventive of flood is *Forestation*.

'The wind no man can tame. Like the earthquake, it is a hazard which civilization must accept. But floods are, in part, man-made. Once the Miami Valley, the pathway of the latest horror of the angry waters, was tree-clad and root-bound against excess of moisture. Then man came, saw gold in the standing timber, and felled it covetously and ignorantly.' So asserts the Sault Ste. Marie 'Evening News,' and asks: 'The greed that felled those noble trees, the carelessness and ignorance that stripped those narrow watercourses to the fatal onrush of the raging torrent—shall they not come under a resolution of abatement?'

We see examples of forest-destruction in many parts of the world, notably in China, where, according to the Sioux Falls 'Press,' to mention only the most notable floods, in 1833 no less than ten thousand persons were drowned by the floods; in 1888, three thousand; in 1904, over a thousand; while last year the floods made China the scene of a particularly dreadful disaster.

If floods are frequently reported from the Chinese Empire, they are seldom reported from Europe, but even there, in Paris itself, the people 'who have a most compelling reason to strive to keep their Seine within bounds, have not been able to previse against all contingencies, as witness the overflow of that stream three years ago,' the Galveston 'News' points out. But, as the Knoxville 'Sentinel' comments: 'After the last Seine flood the French Government took steps to afforest slopes which have been injudiciously denuded. It may be necessary for Ohio and Indiana to do likewise.' Their own recent disaster has caused French for-

esters to take special interest in ours. M. Daubray, Inspector of Forests, together with all the technical authorities in the French Ministry of Agriculture, agree, so we learn from the New York 'Tribune,' 'that the destruction of forests near the sources of rivers and high plateaus and hills is the primary cause of the Ohio disaster;' moreover, this opinion is shared by our Ambassador in France, the Hon. Myron T. Herrick, formerly Governor of Ohio, who states that 'for many years Governors of States where floods are now raging have repeatedly impressed upon Legislatures and the public the urgent necessity of enacting stringent laws based on the scientific experience of France and Germany for protecting forests from devastation and wholesale destruction.' The present catastrophe is attributed by Ambassador Herriek to this waste of forests, 'which, by timely legislation, could have been avoided.' He urges that no time should be lost 'in taking energetic measures to replant tracts of land so improvidently denuded of trees.' Finally, the Ambassador regrets that 'the wise provision of law embodied in all leases of land in the rural districts of France, requiring the lessee to plant a tree whenever a tree dies or is removed, does not apply in Ohio and Indiana.' Such provision, it is added, 'is merely one of many precautions to protect French trees, and if enforced during the last thirty years in Ohio and Indiana would have prevented the present disaster.'

Turning from France to England, we find similar expressions of opinion in the editorials of London newspapers, summed up in the 'Daily Mail's' charge that 'one cause of the floods is undoubtedly to be found in the destruction of forests.' The 'Daily Mail' emphasizes 'the extreme importance of the campaign now being carried on in the United States for the protection of the remaining forests and the reforestation of denuded areas.'

Toronto Students in Norfolk.

Dr. Fernow's Students Study ing Afforestation Problems.

From the 20th to 26th of April the third and fourth year students of the Faculty of Forestry of the University of Toronto under Dr. B. E. Fernow, Dean, spent a most profitable week at the Ontario Government Forest Nursery near St. Williams in Norfolk County. This is the second visit made to these nurseries by this school and arrangements are now being made by which it will be possible for all students after passing their first year to spend the whole summer there and thus become thoroughly

transplanting tools imported from Germany and many a student that day found himself closer to mother earth than he had been since his mud-pie days.

These tools, complicated and even cumbersome though they seem, are yet both rapid and efficient in the hands of an expert. They are however, only fitted for the soils for which they are designed, and while the students handled them with considerable success, it is doubtful whether they will prove widely applicable in this country.



SNAPS IN THE NURSERIES.

1. Making Seed Beds.
2. Dr. Fernow Shows How to Transplant.
3. Making Growth Studies.
4. Plantation of Jack Pine on Sand Waste.

familiar with the practical side of the work. This year the trip was held between spring examinations and came as a pleasant relaxation for studies for the eighteen students who took part in the excursion.

On arrival at the nursery the boys were met by Mr. E. J. Zavitz, the Provincial Forester for Ontario, who conducted them over the ground, explaining the work and giving the history of the various plantations inspected. The following day, under the instructions of Dean Fernow, they were initiated into the uses of the many mysterious

The reforestation of the waste land is done in rows, the young trees (mostly Scotch pine) being set about four feet apart each way. On grass lands sufficient sod has to be removed to preclude the possibility of the young trees being choked out by grass and weeds. Usually a plot about two feet square is sufficient for this purpose. Where conditions permit, the waste lands are ploughed with furrows about three feet apart, and the men work down these furrows in groups of two, (one man making the hole with a spade, the other setting the plant,)

a single group often setting as many as 3,000 plants a day.

The Forestry students took a hand at all these methods, some of them realizing for the first time the full significance of the curse of Cain.

The necessity for reforestation in this locality was clearly seen in a ten mile tramp they took, headed by Dr. Fernow, through the surrounding country. Such land as was still being farmed, bore but scanty crops. In the lee of the snake or stump fences the sand was drifted like snow, and from one point, over a square mile of practically bare sand could be seen heaped in dunes or dug into hollows by the wind.

That the sand was unfitted for farm crops was very clearly seen. That it was capable of producing splendid forests was as clearly indicated, both by the vigorous growth of the young plantations, and by a stem analysis of the old stumps of the original stand of white pine and chestnut which frequently showed the remarkable diameter growth of an inch per year. Walnut and butternut are indigenous in this region, as are also many trees such as the black gum tulip tree (yellow poplar) and chestnut which are exotics in other parts of Canada.

The students were the guests of the Ontario Government, though it is doubtful if they really earned their board for it was the good old fashioned country fare such as one reads about, but seldom enjoys. It may have been for this reason that they were none too keen to return to the city after their five day visit, but it is more likely that the prospect of renewed examinations was the chief reason for this reluctance.

AN EARLY CONSERVATIONIST.

Sir Richard Scott's Work as Commissioner of Crown Lands.

In the many fine things that were said of the late Sir Richard Scott who passed away at his home in Ottawa on April 23 in his eighty-ninth year, there was but little note of what he did for forest conservation. Sir Richard was so long in public life that people are apt to think of him only as Dominion Cabinet Minister and Senator and to overlook the fact that many years ago, in fact in the early days of Confederation, he was Commissioner of Crown Lands for Ontario. One of the biographical notices of the deceased parliamentary leader thus refers to this feature of his work.

'On taking office as Commissioner

of Crown Lands for Ontario Sir Richard formulated a policy in regard to timber licenses which allayed the fears of the lumbermen that their operating regulations were to be ruthlessly changed.

'He was afterwards asked to take up the matter with the Quebec Government, did so and submitted a series of suggestions which were adopted with but few modifications. This was not the only service Sir Richard performed for the lumber trade, however. Some years before this the ruinous policy of allowing squatters to locate on lands chiefly valuable for the pine and not suitable for settlement had been in operation. Against this he warred by every means in his power and was the first to draw public attention to the supreme importance of the conservation of the great national asset, Canada's timber resources. Had his suggestions been adopted in time it would have meant the inheritance of immense wealth for the present generation.'

WHAT'S DOING IN THE ROCKIES.

Interesting Development in the Work of the Dominion Forestry Branch.

Number One, Volume One of *The Rocky Mountain Review*, the quarterly publication issued by the staff of the Rocky Mountains Forest Reserve comes smilingly forward in a happily-chosen green cover. Inside the cover are twenty mimeographed pages of the snappiest kind of news and suggestions. The *Review* marks a new stage of development in forest administration in Canada. A few years ago the Rocky Mountain Reserve was a vision, a hope of foresters and forestry enthusiasts. Now there is a finely organized territory under an inspector, five Forest Reserve Supervisors and twenty-four rangers. Further, through the *Review*, they keep in touch with one another and with the progress in other parts of the country.



The Historic Gate of Old Fort Garry, Winnipeg.

Says the announcement in this first issue:—

This publication has a number of purposes, the chief of which may be stated as follows:

1. To serve as a directory of members of the Service in the District.

2. To act as a news letter so that each Reserve may know what is being done on the others in the District and may compare the progress of work on the various Reserves.

3. To act as a medium for exchange of ideas between officers and rangers throughout the District.

4. To act as a basis of exchange with National Forests in the United States who publish similar papers and for exchange with other branches of the Dominion Service and the Forestry Services of the various provinces. Also to give the members of the Alberta District force the benefit of the experience of other Forestry Services both in Canada and abroad.

5. To act as a periodical catalogue of Forestry Branch publications and library accessions.

6. By fulfilling the above functions to maintain a feeling of unity and solidarity among the members of the Alberta District force.

In order to accomplish the object of furnishing information in regard to the work being carried on in the various Reserves of the District the Supervisors of each Reserve have been requested to prepare a short statement each month of the work done on the various Forest Reserves under their charge. These news letters will describe the Forest work under the following headings: Improvements, Fire, Timber Sales, Timber Permits, Grazing, Trespass, Investigations, Miscellaneous Activities, and Personal Mention.

It can be readily understood that with the large body of men employed in this District various schemes of promoting efficiency in the work of the Service are constantly being devised. This is particularly true on Forest Reserves which have a large amount of one kind of work such, for instance, as the settlers permit business. In such Reserves the wide-awake Forest Officer generally has devised some simple scheme for expediting the handling of this business and contributing to the convenience of the public as well as reducing the cost to the Forestry Branch. The same is true of other lines of work. Also experiments of various kinds in the line of construction are constantly being carried on and frequently very good ideas

are developed. In order to give the entire force the benefit of this experience it is planned to run a Department for contributed articles in the Rocky Mountain Review and Forest Rangers and other Forest Officers are requested to forward short articles of this nature for insertion in the publication.

A considerable number of forest publications from the National Forests in the United States are received by the Inspector's Office as well as a number of lumber journals and forestry periodicals. In such papers there is generally to be found a great number of items of interest to members of the Forestry Service and one of the main purposes of this publication will be the insertion of items clipped from exchanges so that they may be brought to the attention of all of the officers in the District.

The Canadian Forestry Journal wishes the 'Review' a long, useful and happy life. In the promotion of efficiency and pleasure among all it reaches it will do a great work in Canadian forestry to-day.

The officers in charge of the reserve are: — District Inspector, W. N. Millar. Supervisors Forest Reserves; Crows Nest, R. M. Brown; Bow River, F. G. Edgar; Clearwater, Jas. W. McAbee; Brazeau, L. C. Tilt; Athabasca, L. C. Tilt, (acting); Cypress Hills, W. N. Millar, (acting); Cooking Lake, W. N. Millar, (acting).

PROGRESS IN FORESTRY.

(Continued from page 69.)

twice as much to build a house as it did in 1900. Fast as our population in Canada has been increasing since 1890 our wood consumption has been increasing nearly three times as rapidly. Canadians are now the largest per capita consumers in the world of wood products. Our timber exports to Great Britain fell off nearly one million dollars last year. In two or three decades when we have largely used up our valuable timber and feel forced actually to grow our timber supply the prices will be for the poor man almost prohibitive.

In view of these facts why do we

still prate about our inexhaustible forests? I have recently heard it stated that there were billions and billions of feet of fine saw timber in the part recently added to Manitoba. I am not a pessimist in regard to this recent addition, but I feel sure it has a splendid and wonderful future. Nevertheless as the result of terrible fires in the past eighty years only a fraction of one per cent. of this territory to-day has commercially valuable saw timber,—that is, timber over eight inches in diameter. But the country has a thrifty young stand of spruce, which, if it can be saved from fire, will in say twenty-five years form highly valuable pulp wood forests.

Dr. Judson F. Clark of Vancouver, says:—'Personally, I think it is beyond doubt that the development of a rational, and therefore practical and business-like, forest policy, by the Canadian Provinces and the Federal Government, will have a greater influence on the prosperity and happiness of our country half a century hence, than the solution of any other problem which is within the power of our generation to solve.'

If we agree with Dr. Clark the next question is how are we to go about this work? To arrive at a just and correct basis of co-operation is the crux of the problem, and hence I have placed it in the centre of the following six factors, which I believe will appeal to you as perhaps the main elements to be considered in your working out of such a forest policy, viz.:

1. Education of Public Opinion, to provide the authority, the money, the driving power.

2. Classification, according to its producing capacity, of all publicly owned land, including of course licensed berths, to provide for permanence of use.

3. A scheme of cordial and mutually profitable co-operation, on an equitable basis of duties and rewards, between the sovereign people and the operating lumbermen.

4. Organization on a strictly non-partisan basis, of a trained and efficient forest service personnel, to administer and supervise, and carry out, all needed field and office work.

5. Provision and equipment for investigation and research work, dealing with forest problems of every description, and methods of solving them.

6. Legislation—Whatever may be required to give full effect to the will of the people regarding the management of their forest lands, and to insure uniform requirements from every forest user.

PRESENT CONDITIONS.

'Wise use, wisely regulated,' is the essence of conservation, and its twin axioms as applied to Canada's renewable resources are, 'Every acre a producing acre,' and 'Every acre to its best use.' This highly practical ideal demands as its first step, land classification, and I am glad to say that the Dominion Forestry Branch is undertaking vigorously this most important work of determining just what portions of these Prairie Provinces are primarily adapted to the production of wood crops, rather than food crops. During the past three seasons many survey parties in different parts of the West have been engaged in this work, and as a result of their work approximately ten million acres have been classified as forest land and recommended for inclusion in the permanent forest reserves, or national forests, as I prefer to call them. This addition to the older reserves will give you a total of some thirty-five thousand square miles, which, however, is only a good start in relation to the whole area of the public lands best adapted to forest purposes.

While it is true that rough timber land has acre for acre, a lower producing power than farm land, still the enormous area of this non-agricultural land in Canada puts it in the front rank of her natural resources. Dr. Fernow's survey of Nova Scotia

classes nearly eighty per cent. of that Province as absolute forest land. British Columbia has at least as great a proportion, while in Ontario and Quebec probably two-thirds is non-agricultural in character. In 1910 I examined eight thousand square miles of the country north east of Le Pas, now a part of Manitoba, and eighty per cent. of this territory is absolute forest land. Taking Canada as a whole probably fifty per cent. of her cropable surface is chiefly suited for growing timber.

Are you satisfied that as a people Canadians are giving enough attention to this half of the national farm? Upon its wise management must rest the future prosperity of the lumber industry. The forests in controlling water supply and water power are destined more and more largely to affect the welfare of farmers and manufacturers.

EDUCATIONAL WORK.

Grain and stock farmers are being given a ten million dollar grant to assist in their work, but lumbermen (our tree farmers) are given little or no help to discover the laws which govern a maximum production of their crop. Farm crops require only from fifty to one hundred days to mature; timber crops require from fifty to one hundred years. In this long time element rests the fundamental difference between agriculture and silviculture, between farm crops and timber crops. In general the Government is the only institution long lived enough to practise successful forestry.

THE CONTROL OF LICENSED OPERATORS

All are agreed that the Government should have absolute control of all lumbering operations on Crown lands, including of course, the licensed berth lands, simply to insure that your forests shall be cropped, rather than mined. Yet it is to-day a most disquieting fact, that on all that part of the forest domain now held by licensees, the public has actually permitted all effective control to lapse

and become, so far as forestry is concerned, a dead letter. The nation is exercising no supervision over their work, in the woods—which is the one only thing that really counts, in forestry.

You need to consider the future more. For instance, in this latest copy of rules, issued in 1910, to govern the cutting of timber on your licensed lands, I find page after page of 'Thou Shalts' and 'Thou Shalt Nots,' all designed to insure,—What? Why only that you may get a few dollars of revenue from the existing crop of timber. All well and good, but what about silviculture? What about applying some actual forestry methods in the woods, so that in cutting away this old stand of trees a thrifty new crop may be provided for by natural reproduction? What, in a word, are you doing to make provision for the cropping of the forest rather than the mining of it? What are we doing to build up and safeguard the future producing power of our forests?

CONCLUSION.

There are two abuses which menace the free, equitable, and profitable development of our natural resources, by scientific and business methods. These are special privilege, and political influence. If you can see your way, first, to overcome these twin evils which are now blocking so largely any efficient progress towards improving and protecting your timberland, and second, to co-operate fully with your lumbermen; I feel safe in saying that nature herself will present no problems which a trained field force cannot easily solve. Let all forest officers in the Government service, and more especially at present, forest rangers, be required to pass a fair test examination in token of their real fitness and ability; and let all forest users be treated with absolute equality regarding the requirements which shall govern their work in the woods.

THE WINNIPEG CONVENTION.

(Continued on page 65)

and Manitoba Agricultural College. It is the centre of the grain trade and a very important point in the flour-milling, lumber and live stock industries besides being the commercial gateway to the whole Canadian west. There are a number of beautiful suburban districts.

RAILWAY ARRANGEMENTS.

Owing to the fact that the Convention will be held on the day preceding and the first two days of the Winnipeg Exhibition, delegates attending from points within what is called the 'Winnipeg Exhibition District' will not be required to secure certificates. They will purchase railway tickets at the special rates in force during the Exhibition. It will be necessary, however, that those travelling on these tickets give their names and addresses to the Secretary for the purpose of compiling the railway returns. The Winnipeg District extends from Fort William on the east to the Alberta-British Columbia boundary. (On the Canadian Pacific Railway these rates extend to Golden and Cranbrook, B.C.)

FROM EASTERN CANADIAN POINTS.

Delegates attending from points in Canada from Port Arthur eastward can secure single fare rates (plus 25c) on the convention certificate plan. To secure these rates delegates will purchase one way first class tickets which will be sold them at the lowest one way first class fare, plus 25c. When purchasing these tickets they must secure a standard certificate which the agent will furnish upon request, and this certificate when signed by the Secretary in the Convention at Winnipeg as showing that the party was a delegate will be honored for ticket through to original starting point free.

Going Dates.—Tickets for going trip by all rail routes will be sold July 3 to 6 inclusive; days of sale via lake and rail routes to be announced later.

Returning.—Standard convention certificates properly filled in and signed by the Secretary of the Canadian Forestry Association will be honored at Winnipeg up to and including July 24 for tickets to original starting point free, except that where lake routes are used additional payment will be required as follows:

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CONTENTS: Page.

Winnipeg Convention	81
Obituary—Dr. Hay, Mr. Maurice Quinn	82
Forest Conservation	83
British Columbia Forest Branch	85
Should New Brunswick Forests be Thinned	87
How the United States Lost an Op- portunity	89
The Problem of Sable Island	91
Dominion Forest Parties	93
Cross Ties Purchased in 1912	94

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WINNIPEG CONVENTION.

By the time this issue of the Canadian Forestry Journal reaches our members the final preparation for the Winnipeg Convention, July 7, 8, 9 will be in full swing. In order that there may be no mistake the details of the railway arrangements are repeated in this issue. (Page 92.)

While it is still impossible to give the program in detail, it is evident from the names that have been already received that the most important subjects in regard to forest conservation in Canada will be fully dealt with by those who are able to speak with authority. This will be particularly true of all subjects relating to the forests of Western Canada and of the three prairie provinces, and of farmers' tree plantations on the prairies. From the returns already received it is expected there will be a large attendance from both east and west, but particularly from the prairies.

The Call to Convention was sent out before this issue so that it is doubtless now in the hands of all our members, and we shall be glad if those who are intending to go to Winnipeg will send a note to that effect to the Secretary.

While the Secretary will be leaving in a few days to arrange the final details of the convention at Winnipeg, letters addressed to him at the Canadian Building, Ottawa, will be carefully attended to as arrangements have been made either to have correspondence dealt with promptly in Ottawa or forwarded at once to him in the West.

There is no reason why this should not be one of the best conventions ever held by the Association, and

there is no hesitation in urging all who can do so to attend and take part. Aside from the convention itself there will be the opportunity of seeing Winnipeg and the Central West under the best conditions.

Make up your mind to come and notify the Secretary of this fact.

OBITUARY.

The Canadian Forestry Journal has this month to chronicle the sad news of the death of two of its oldest members—Dr. G. U. Hay of St. John, N.B., and Mr. Maurice Quinn of Saginaw, Mich.

Dr. Hay.

Dr. Hay was known for many years as one of the educational leaders of Eastern Canada. His home was at St. John, N. B., where he had been successively teacher, Superintendent of Education for the Province, and Editor of the Educational Review. Never a very robust man he had not only lived out the appointed three score years and ten but had also accomplished more than most men of robust physique. He was a member of many learned societies and was specially devoted to the study of nature. Many years ago he became convinced of the need of forest conservation and was one of the earliest members of the Canadian Forestry Association. He continued closely identified with its work up to the time of his death. Dr. Hay was particularly active in the work of arranging for the forestry convention in Fredericton in 1910, and the success of that convention was due in no small measure to the assistance which he gave the Secretary and the program committee. In the pages of the Educational Review he devoted a great deal of space to judiciously bringing before the teachers of the Maritime Provinces the need of forest conservation and the incalculable loss which the country would sustain in every way should its forests disappear. His death leaves a sad gap in the ranks of the foremost leaders in Eastern Canada.

Mr. Maurice Quinn.

Of an entirely different type was Mr. Maurice Quinn of Saginaw who died suddenly on May 23 when on a visit to New York. Mr. Quinn was born in the Province of Quebec and lumbered in that province and in Ontario before moving to Michigan. Here he had a most successful career as a lumberman, and later acquired limits in the big timber at Albemarle, B. C. Strong and sturdy, Mr. Quinn was the embodiment of the active, shrewd, kindly race of men who have developed the lumber business under conditions of difficulty in regard to transportation and markets. He was not

a theorist as that term is usually understood, but the rugged native eloquence with which he warned those who attended the British Columbia convention of the danger that lay before British Columbia unless she handled her forests better than had Michigan, showed how deeply the practical teachings of conservation had sunk into his mind. He told of how men had laughed at him when he talked of conservation when he went to Michigan thirty years ago, and how he had lived to see one great river, from which billions of feet of timber had been cut, become entirely denuded so that today not a log floats upon it. In his practical way Mr. Quinn was a strong worker for conservation, and his loss will be keenly felt by supporters of the cause.

WOOD PRODUCTS LABORATORY.

Important Step Taken by the Government of Canada.

The Dominion Government has decided to institute a new department in connection with the Forestry Branch which will undertake the work of investigating the possibilities of conserving our forests by reducing waste in manufacture, by prolonging the life of forest products used in construction, and developing uses for products now wasted for the lack of knowledge as to how they may be employed.

To take charge of this work Hon. W. J. Roche, Minister of Interior, has selected Mr. A. G. McIntyre, at present editor of the Pulp and Paper Magazine and acting secretary of the Pulp and Paper Association. Mr. McIntyre is a graduate of Acadia University, and he also graduated from McGill University in chemical engineering. He was chemical engineer of the Jonquiere Pulp Company where he had charge of the water power, water discharge measurements, etc., and he put in a bleaching system of his own design saving in the value of the paper. He was also engineer in charge of construction for Price Bros. at Kenogami, Quebec, and did the investigation for the new sulphite mill. His special qualifications for the work should assure the successful carrying out of the project. The work will be carried on at present in co-operation with McGill University.

The various classes of investigation to be carried out will be as follows: Wood tests, timber physics, wood preservation, wood distillation and wood pulp. This is an advanced step on the part of the department of the interior. The Forestry Branch is one in which Dr. Roche has been particularly interested and this new step is along the lines of modern scientific forestry work in Germany and other European countries.—Ottawa Citizen.

Forest Conservation.

A. Edye de Hurst, Dennyhurst, Dryden, Ontario.

The existence of the Canadian Forestry Association is evidence that Canada is at last awakening to the awful losses she has suffered during the last few years through the destruction of her fast-diminishing forest resources. It is probable however that few of those in whose hands the Government of the country at present rests fully realize the real magnitude of that loss, the mere figures as to the devastated acreage convey so small an idea when placed alongside the square mileage of the Dominion of the regions still believed to be under growing timber. Nature is given the credit of being capable of making good that loss in years to come. If every generation looks at it in this light I would not give much for the forest assets in the near future. Nature is not getting half a chance at present. I am no pessimist, I believe she is going to get her opportunity; but it will be in the face of strong opposition. This will arise because of the indifference of

many of the people to anything beyond their own immediate interests.

That Canada will always be more or less liable to forest fires through unavoidable occurrences must be accepted as a foregone conclusion; but not half the present losses can be said to be occasioned in this way. It is perfectly fair to base this estimate on observation in a given district and the demeanor of settlers in the matter.

In theory few will oppose forest conservation; they do not wish to stand in the way of Tom or Dick getting 75 a month as rangers. True, neither may know the difference between a white and black spruce; but 'that does not affect their suitability for the berth.' Besides, the rangers are occupied on Crown lands and will not molest people. If the losses were only those started on the last named—allowing for unavoidable accidents—there would not be so much to complain about; but in a vast number of cases fires originate on settled lands and



Broadway, One of Winnipeg's Beautiful Streets.

here is where the people's indifference so often shows itself. A sense of the beauties of nature and the capabilities of making those beauties add to the comfort of the home and the protection of crops, does not occur to them, or if it occurs, there is the thought that it will entail a little extra work for which the dollar may not be immediately forthcoming. They may not want certain trees burnt; 'but there—the land has to be cleared, let it run.' 'Destroys the humus, what is that? Nothing better for the land than wood ashes.' Fire has run into A's land, 'Well, A wants his land cleared up also.' Fire reaches B's and burns a few cord of wood. B rather resents this; but as it has cleared a few acres for him, 'does not want to be unneighborly.' Reaches unsettled land, 'well, that will not hurt anybody.' If Crown officials should ask questions—nobody knows anything. If these people want to be free of trees, why in all conscience do they not go to the prairie? Why should the welfare of those who are seeking to make their farms what every farm in the country is capable of being made, a place of beauty, a home, a centre of associations, be constantly threatened? Why should these be perpetually confronted with the dread of having all on which their hopes are fixed swept away?

The vast amount of liberty enjoyed in this Dominion as compared with that of the country of origin of many settlers, has developed into license. The future is nothing to men with this idea—there is no love of the land; they live for self. That these are in a minority, I do not doubt; but is the country to suffer because of them? However we may incidentally occupy ourselves, we are a nation of farmers, yet we cannot confine ourselves to farm subjects. A greater spirit of patriotism must prevade us and thought for others.

If those who are causing this annual loss to the Dominion will not realize their duties and obligations, those who are in the majority and can make them, must enforce the observation of greater care in respect of fires. Instead of fire rangers we want an efficient gendarmerie the personnel of which should, besides their other duties, take cognisance of every fire possible and report every case where the same be not under proper control. The mere knowledge amongst settlers that they are under observation, would cause greater care to be taken. A force of this kind should be permanent, formed of picked men, and no party matter. Recruited from the right sources a body of this kind would form a valuable nucleus for defensive organization and would be more highly thought of than some militia units, officered by men leading a town or village life instead of by yeomen. I doubt if such a corps would cost more than the present rangers; but if it did, the results obtained would, in my humble opinion, justify the expenditure.

It will take many a day yet before the fertile farms of this northern district can be thoroughly safeguarded from fire. How many of those men buoyed up with hopes for the future, will ever attain their object unless the powers-that-be put their foot down and not only say that this wanton destruction must cease; but see that it does cease. The political support of those who would thwart the honest endeavors of a party determined to enforce the very moderate demands of those who say that the fire danger has got to stop, is not worth relying on. The system also of giving appointments to party heelers (one side is as bad as the other) instead of selecting the best men, militates against the proper enforcement of the law. Few can count on holding a berth beyond the life of a Parliament, that appointment is coveted by half a dozen other village Solomons of the same party, so the holder rests and is thankful and is careful to look the other way when there is much smoke about.

The Canadian Forestry Association will have the hearty backing of all true Canadians in any scheme it may undertake for the conservation of the forest areas.

There is one point that must not be overlooked in this question and that is the birds. These constant fires often at breeding time, destroy quantities of them.

The balance of nature is so upset in this district, (Dryden, Ont.) that where there should be thousands of grouse, there are only dozens. The natural increase is barely sufficient to keep pace with their destruction by their various four-footed foes, without counting the pot-hunters.

Give me the trees with hoary frost in
winter-time
And I will call this country mine.
Give me the trees in budding spring
And I will all their beauties sing.
Bid me to stay where fire has swept and all
must die,
And I will spread my wings and fly.

EFFICIENCY IN THE CIVIL SERVICE.

Civil service reform, in Canada, has usually been taken to be synonymous with the problem of eliminating party patronage. . . . It is well to put an end to the filling of government offices by irresponsible patronage committees, but this is only a negative reform. It will not of itself ensure an efficient service, and an efficient service is urgently required. In a country like Canada where the tasks assigned the central government in the development of our resources are so great, it is of the first importance to attract men who can measure up to their work, to reward them fairly with kudos or with cash, and to organize them to secure the best results.—*Queen's Quarterly.*

British Columbia Forest Branch.

Outline of the Organization of this New Service and Results of the First Year's Work.

The establishment of the British Columbia Forest Branch under the Forest Act, framed by Sir Richard McBride and his conferees, after the investigation held all over the Province by the Royal Forestry Commission appointed to look into the matter of existing forest conditions, was received a little over a year ago with the greatest enthusiasm by forest conservationists in all parts of the country. Now that the Forest Branch is approaching its first anniversary it is interesting to note the advances which have been made by the executive staff appointed by the Hon. W. R. Ross, Minister of Lands.

From the middle of last summer continuously without a break up to the present time Chief Forester H. R. MacMillan and his board of four lieutenants, have been devoting themselves unstintedly to the work in hand, and it may be said that the results achieved are in keeping with the enthusiasm with which they addressed themselves to their task. Whereas under the administration prior to the establishment of the Branch there were only two departments which concerned themselves with the management of the forest resources of the Province, with an executive staff of perhaps twenty men, there is now an executive force of about fifty exclusive of the the two hundred fire rangers appointed for the dangerous season.

The organization is divided as follows: under the Minister there is the Forest Board of five members, viz., the Chief Forester, in whom final authority under the Minister rests, the Chief of Management, to whom falls the carrying out of the 'timber sales' which have taken place of the old 'special license' established in 1907 and discontinued in 1909, when the Government of the Province placed complete embargo upon the alienation of timber; the Chief of Operation, with whom rests the work of fire protection; the Chief of Surveys, who has charge of the various reconnaissance and other surveys and land classifications under the Forest Branch; and the Chief of Records on whom devolves the collection of revenue and the maintenance of statistics in the Branch.

For the purposes of proper administration the Province has been divided into eleven geographical districts. These are as follows: In the south from east to west, Cranbrook, Nelson and Vernon districts. North of these is the Railway Belt, administered by the Dominion Forestry Branch. North of this from east to west are the

districts of Tête Jaune Cache, Kamloops, Lillooet and Vancouver. The districts farthest north from east to west are Fort George, Hazelton and Prince Rupert. The remaining district is Vancouver Island.

The location of each of these districts is fairly well given by its name. The areas in acres embraced in these districts are as follows: Cranbrook, 7,325,000; Nelson, 5,259,000; Vernon, 6,963,000; Tête Jaune Cache, 4,698,000; Kamloops, 6,619,000; Lillooet, 11,431,000; Vancouver, 15,755,000; Fort George, 28,785,000; Hazelton, 13,786,000; Prince Rupert, 18,723,000; Vancouver Island, 6,463,000.

With the enormous quantity of timber which the Province possesses (it is estimated that fully three hundred billion board feet of merchantable material, or half of that standing in the Dominion is within the borders of British Columbia) the main problem is that of protection from fire. To this end every possible precaution is being taken by the Forest Branch to keep down this item of loss. The constant effort is to secure as forest rangers men of ability and experience in order that the system of patrol will work with the regularity of a machine in the dangerous season. Great anxiety is being felt on all sides lest the great growth of grass which was the result of the unusually wet spell at the close of last summer may produce conditions of unusual danger to the forest growth. This year will certainly be one of the most difficult in the history of the Province.

One of the advanced means of protecting the forest from fire adopted by the Branch is that of placing eight power launches on waters adjacent to large bodies of timber. On the coast, there are to be four 36 ft. launches and two 54 ft. launches with a power calculated to give ample speed in cases of emergency. In some cases it would be impossible to reach by land a fire in some of the rocky districts near the sea. Rapid water transportation, however, is expected to solve the question of getting men and supplies quickly to the point of danger.

The Chief Forester notes in his annual report that the scarcity of trails, telephone lines, and other permanent improvements for the use of the fire protective force will greatly hamper the movements of those to whom is entrusted the work of keeping down fire. In many parts of the country where the timber is largest and the fire risk greatest, there is, as yet, no means whereby a large force of men can be placed

in the field upon short notice. With the development of the Branch and the application of even a small part of the moneys which come into the public coffers from the forest resource every year, a thorough system of patrol equipment may be established and maintained, to the very great advantage of all those who have with them at all times the anxiety of a forest fire.

So far only a very small part of British Columbia has been accurately described for topographical and economic features. The work which was carried on by the Branch under twelve parties of reconnaissance men, as result of which five thousand square miles were accurately plotted on maps, was a remarkably good start upon an enterprise which will be greatly developed in the course of the next few years.

The timber sales which have been instituted have already brought to the Government approximately \$200,000 without having alienated any other rights than that to cut the standing crop of timber. The method of procedure adopted by the Government is to cruise for sale blocks of timber in various parts of the country whenever application is made by an operator. A value is placed upon the timber and bids are called in order that the Government may receive the highest amount over the upset price. The successful bidder has to comply with all the regulations of the Government with regard to cutting, and after the tract in which he operates has been cleared he has no further interest in the area. The timber which once belonged to the Government, is now deemed sold and the operator, if he chooses, may go to another location and buy timber in the same way again. As market conditions become improved and the demand for British Columbia timber increases, the great part of the timber now in Government hands will be disposed of in this way. Of course, all the product, of the fourteen thousand special licenses which were issued between 1907 and 1908 from which the Government at the present time is receiving approximately \$2,000,000 annually, will be dealt with as the licenses provide.

The institution of the new methods of administration have caused a large increase in the staff necessary for the compiling of statistics and returns in connection with the timber sales and the moneys from licenses throughout the Province. The Chief of Records, therefore, has had a large office staff installed, and a thorough double-checking system has been devised which will ensure the accurate handling of all that part of the provincial revenue which comes through the Forest Branch.

Chief Forester MacMillan has happily combined the scientific knowledge of the twenty technical foresters whom he has

secured for the service of the Branch with the practical experience of the timber cruisers, fire rangers and other executive officers, to the end that the whole force can deal with conditions in the best possible way. The technical men have been drawn from all parts of the Dominion of Canada, and it is evident that a strong force of scientific foresters is already within the borders of this country. The majority of the school trained men are engaged in survey and timber cruising work. As time goes on other branches will be developed, particularly those connected with the careful utilization of the products of the forest after they have passed the sawmill. Co-operation with the lumbermen of the province in securing an expert of standing as the head of this particular branch when established is looked upon with great favor in all parts of the Province. It is expected that the lumbermen and the Forest Branch will work together in almost every detail of the administration of the forest resource to the end that the greatest possible amount of value shall be returned to the people of the Province.

One of the most notable achievements of the Government, the Railway Commission and the railways now under construction in the Province is the adoption of a system of fire protection which involves careful patrolling by the Government rangers and at the same time advanced measures by the railroads for eliminating the sources of danger from construction and locomotive fires. All brush which is being created by those cutting the right of way and those making ties near the line is to be piled and left to the orders of the District Forester. This and the further fire preventive measure of burning this slash upon the right of way are being carried out in the Tête Jaune Cache district where the line of the Grand Trunk Pacific is being constructed. That which was thought impossible and utterly unpractical a few years ago is being shown to be reasonable and thoroughly economic. It is a following out of the principle which is becoming generally recognized, that slash which is created in the forest is bound to burn at some time, and it is well to do away with it when its burning can be controlled than to wait and have swept away by a large fire originating in this timber a great part of the forest resource.

There were but few amendments to the Forest Act proposed in the last session of the Legislature. All were passed with the exception of those dealing with the royalties and the use of the Doyle rule. These questions have been left over until the session of 1913-14.



Where the Forestry Convention will be Held—The Winnipeg Industrial Bureau.

Should New Brunswick Forests Be Thinned.

John D. Howe, St. John, N.B.

In a paper read before the New Brunswick Natural History Society, Mr. John D. Howe, of St. John, N.B., who has for many years taken an active interest in forestry, urged the making of an experiment in 'thinning' to promote growth in the 'thicket' spruce forests of that Province.

Mr. Howe recalled in opening a discussion at the first meeting of the Canadian Forestry Association in 1900, between Sir Henri Joly de Lotbiniere, Dr. Robert Bell, Dr. Wm. Saunders, Hon. W. D. Perley, Mr. Wm. Little and Sir William Hingston. Sir Henri Joly and Sir Wm. Hingston contended that the estimates placed on the growth of spruce were too high, the former saying that in his experience he had not found a more favorable average than one inch in diameter in five or six years. It was also pointed out that while old field spruce grew rapidly they branched out

from the bottom and were therefore largely useless as timber trees. Mr. Little pointed out that it was the rate of growth of the whole forest, not of a single tree growing in a garden that was important, and Sir Wm. Hingston said that even in the same acre of forest some trees would grow as much in three years as others in twelve years.

Mr. Howe said he had measured large quantities of spruce, and though people argued that the growth, owing to greater humidity, was greater in New Brunswick than in Quebec, he had not found the average greater than Sir Henri Joly had stated.

This examination disclosed that trees grow, not regularly, but fitfully. Some trees would grow rapidly for twenty years and then scarcely make any progress for another twenty years, and then suddenly break into vigorous growth again, putting on as much wood in two years as they

had in the preceding twenty. Different trees of the same species taken from the same tract would show a totally different variation.

After discussing all the possibilities of soil and elevation and climatic conditions, Mr. Howe gave it as his opinion that these could not explain variations so great and so complex. There remained but one other possible cause the variation of light area for the crown of the tree.

People interested in spruce reproduction maintained that the natural spruce forest could be cut over every ten or twenty years, the large trees taken out and the young ones allowed to grow, thus in the end arriving at a perpetual yield.

This system appeared very alluring at first, but the original clear boled trees rapidly disappeared with each cutting. The only trees to take their place were those which grew where clearances had been made sufficient to let the sunlight reach the ground and these trees were usually branched to the ground, producing very rough timber.

Nature's Plan.

Mr. Howe then described the natural growth of a spruce forest after a fire had cleared the ground. The trees came up by millions, ten or twelve seedlings to a square foot. The ground was completely shaded and all other forms of plant life killed. Then the survival-of-the-fittest struggle commenced and the weaker ones died by tens of thousands each year. In a period varying from thirty to sixty years the survivors reached three or four inches in diameter, and were then twelve to eighteen inches apart. The others had died and crumbled to dust. These saplings fifty feet high with no side branches, straight as rushes, with a small plume of foliage at the top, might be called the foundation of the tall timber forest. This was what was known as 'thicket growth' throughout the Maritime Provinces.

On examining this stand twenty-five or thirty years later it would be found that the trees now reduced in number to one for each four square feet had increased in size to five or six inches, or at an average rate of one inch in ten or twelve years.

The experiences of a number of investigators were here cited to show that often at this stage, where the forest was very even, the light proved insufficient to support the trees and millions of them died or they became so weakened that they became a prey to insects, fungi or wind. Up to two or three inches in diameter it might be deemed best to leave this small growth to natural thinning, but after reaching this stage if uniformity of size conditions existed suspended growth re-

sulted. Mr. Howe then called attention to some specimen sections of spruce. One section showed that the tree took eighty years to reach five inches, and then it suddenly put on heavy growth and in forty years expanded to sixteen inches. This was not an exceptional case, but such specimens were to be had in large numbers from cut over woods, showing that when the tree received increased sunlight it rapidly put on timber.

Mr. Howe argued that the full growth of foliage was reached at a very early age, and it could be shown that as large an amount of wood material was growing on an acre at an early stage as when larger sizes were reached. What then became of all these years of growth between, say, the three inch and twelve inch sizes? Mr. Howe had prepared a table showing what would occur if the growth was not too even. This table indicated a twenty-five per cent death rate of trees for every inch increase in diameter. This he said would give only sufficient increase to allow expansion and the number of dead trees would show what went to waste while the big trees were reaching maturity.

Was there not here an opportunity to assist nature in hastening the growth of the forest? It would be a most interesting experiment to try the process of thinning on some of these tracts of over three quarters of a century of suspended growth, working judiciously so as not to destroy the forest fringe or bulwark which protects the trees from being thrown over by the wind. With younger trees larger gains could be made and enormous waste prevented. The present plan of cutting the best trees would soon make large clear timber a thing of the past. It was not the 'survival of the fittest' but the survival of the unfit, the forest growing constantly worse from the removal of the best trees. He would be a bold projector to change present methods, but unless this were done from whence would good timber be obtained in a few years?

AN ECONOMIC WASTE.

A correspondent writing in the *Haileybury Haileyburian* claims that all along the shore of Lake Timiskaming and tributary streams, there are millions of dollars' worth of fine logs rotting because under present conditions and owing to their scattered character it will not pay to 'water' them, that is, to drag them to the water. They have escaped from drives and been left on the shore by the receding spring freshets. He claims that the Dominion Government should enact legislation to compel the gathering and the floating of these logs to the mills as a matter of forest conservation.

How the United States Lost an Opportunity.

Why the Southern Half of the Turtle Mountain is not a National Forest.

Some time ago before the matter was understood as it is today there was an agitation for the throwing open of the Turtle Mountain Forest Reserve in Manitoba for settlement. It was pointed out by a number of authorities that the land was unsuited to agriculture and that to throw open the reserve would result in the stripping off of the timber and the settlers would soon find they could not make a living. There would then follow, as in similar cases in Ontario and Quebec, the abandonment of these farms. The settlers would have to begin over again in some other part, and the Government would have to do, as Ontario and Quebec are now doing—plant up these light, hilly lands with seedlings at the expense of many thousands of dollars in order to get them back into timber. It was also pointed out that if well handled the Turtle Mountain Reserve would be in shape in a comparatively few years to supply sufficient timber year by year to keep ten saw-mills of the average Ontario size running in perpetuity, besides supplying the surrounding district with fence posts and cordwood.

The Turtle Mountain lies partly in Canada and partly in the United States, and one thing that has puzzled a good many people is this: Why did not the United States reserve their portion for a National Forest? The Editors of *The Canadian Forestry Journal* therefore wrote to Mr. H. S. Graves, United States Forester, Washington, D. C., asking him if the Forest Service had ever had the district examined and if so, why was it not constituted a National Forest. The reply of Mr. Graves is virtually to this effect; that when the district was examined in 1902 it was found that while it was well suited to form a National Forest

only one twenty-fourth of the area remained Government land. It is therefore fair to assume that had the United States Forest Service been on the ground a little earlier all the Turtle Mountain both north and south of the International Boundary would have been a permanent forest. Mr. Graves letter is as follows:—

Your letter of January 7 is received.

I am glad to inform you that a report is on record in this office covering that portion of the Turtle Mountains lying within the State of North Dakota. This report was prepared in 1902 by Mr. J. H. Hatton of the Forest Service. From the report it appears that that portion of the mountains within the United States is similar topographically and in cover to the portion lying in Canada, with which you are familiar. It will probably, therefore, be unnecessary to dwell in detail about the topography as given in the report.

The report indicates that a more or less dense growth of timber and underbrush once covered all of that portion of the Turtle Mountains lying north of Township 161 North and between Ranges 70 to 75 West, excepting the foothills on the south of the mountains and the southern portion of the Indian Reservation.

As a result of fires and cutting, the extent of the heavy green timber was, at the time of the report, confined to about one township, and this was being rapidly removed. The report states that it would be but a matter of five or six years until all the heavy timber would be destroyed or consumed. Reproduction is good on the fire-killed areas. The types consist of oak, popple, ash, birch, elm, willow, box elder, and many varieties of undergrowth.

The need of a forest cover to protect the mountains from erosion is also set forth in the report. The absence of erosion at the time of the report is ascribed to the density of the cover and it is evident that the generally hilly character of the region will render erosion liable should it be removed. No large streams flow from the mountains, however.

The principal industry of the region was wood cutting, as this supplied immediate revenue and resulted in clearings for growing vegetables and small crops. After the clearings had been made wood cutting became a secondary industry.



A Drive in City Park, Winnipeg.

Six portable sawmills having a capacity of from 4 to 12 M feet per day were reported to be operating during the winter in the region known as the 'heavy green timber.' In order to effect rapid clearings settlers would sometimes hire a sawmill and pay the owner \$4 to \$5 per M to saw their logs. Lumber sold for about \$15 per M.

Grazing was a minor industry. No large herds were reported to be in the mountains, though a majority of the older settlers at that time possessed a few head of cattle.

It was reported that many of the settlers found it difficult to make a living. It was found impossible to subsist entirely on what could be gleaned from wood cutting and small garden patches. Nearly all settlers are reported to have spent from 4 to 6 months at some other employment outside of the mountains.

The dearth of good hay meadows through the heavily timbered region made it difficult to winter stock. The hay raised was an inferior quality.

In discussing the practicability of setting aside a Forest Reserve in the mountains, the report states:

'There are not enough vacant lands lying contiguous in the region that would be suitable for reserve purposes.' Only about

one-twenty-fourth of the area between Ranges 70 to 77 West, north of Township 160 North, was vacant. Nearly all of the unentered lands were found in the foothills where timber had never grown to any appreciable extent.

The report concludes with a recommendation that a certain described area be established as a Forest Reserve, provided an exchange of lands could be effected with the settlers owning the lands within the area suitable for Forest Reserve purposes.

From this review of the report it will be observed that an area (approximately 560,000 acres) embracing the Turtle Mountains might well have been included within a National Forest except for the heavy percentage of alienated land within the region and the impracticability of attempting to solidify the government lands of the area.

TWO CONSERVATIONISTS.

'Nothing lost here but the squeal,' declared the pork packer. 'Are you as economical in conducting your business?'

'Just about,' answered the visitor. 'I'm in the lumber business. We waste nothing but the bark.'

The Problem of Sable Island.

F. W. H. Jacombe, M.A., M.F.

The Dominion Experimental Farms report for 1910 contains an interesting reference to the results of the planting done some twelve years ago (May and June, 1901), described at length in the report for the year referred to. Unfortunately the final report is an unfavourable one, only a few of the trees and plants then planted having survived.

Sable Island is one of the most dangerous spots on the eastern Canadian coast-line. It is formed entirely of white sand, and lies about ninety miles from the nearest point on the Nova Scotia coast, and about 153 miles from Halifax.

Its area has been considerably reduced by the action of wind and water on the sand. The present length of the island is about twenty-one miles, and its width, at its widest point, somewhat over a mile. Early surveys gave the length of the island as forty miles and its width two miles and more. Dangerous shoals and sand-bars extend on all sides, and the strong currents from north and south often carry vessels out of their course, while, in addition to this, fogs are frequent; naturally wrecks are many. The planting was undertaken, at the request of the Marine Department, chiefly with the object of preventing the damage done to the island by the wind. Naturally, the further the destruction of the island is carried, the greater becomes the danger from the shoals and sand-bars.

No trees grow naturally on the island. The choice of species to be planted was based largely on observations made by Dr. Wm. Saunders (then Director of Experimental Farms) on a visit to Brittany, France, where much work in the reclaiming of sand-dunes has been done.

The species and numbers of each species planted on the island were as follows: *Pinus pinaster* (maritima), (cluster pine), 10,000; *Pinus sylvestris* (Scotch pine), 10,000; *Pinus sylvestris rigaensis* (Riga pine), 10,000; *Pinus laricio nigricans* (Austriaca), (Austrian pine), 10,000; *Pinus montana* (Mountain pine), 5,000; *Pinus montana mughus* (Dwarf mountain pine), 2,500; *Picea strobus* (White pine), 2,500; *Picea excelsa* (Norway spruce), 10,000; *Abies balsamea* (Balsam Fir), 2,500; *Picea canadensis* (White spruce), 2,500; *Picea mariana* (Black spruce), 1,000; *Juniperus virginiana*, (Red cedar), 1,000; *Juniperus communis*, (Common juniper), 1,000; *Thuja occidentalis*, (Eastern Arbor-vitae), 500. Of the broad-leaved species there were used the following: Manitoba maple, (*Acer Negundo*), 500; *Acer platanoides* (Norway maple), 500; *Betula alba* (European white birch), 2,000; *Gleditsia triacanthos* (Honey locust),

2,000; *Salix longifolia* (Long-leaved willow), 1,000. Planting was started on May 18th, the trees being found in good condition, in spite of having been packed up for six weeks.

The first plantation was made on a sandy bluff near the north shore, fairly well covered with the common sand-binding grass (*Arenaria ammophila*), the trees being planted two and a half to three feet apart each way in a soil composed of pure sand.

One considerable area, to which the name of Gourdeau Park was given, was found to be covered to the depth of several inches with a black, peaty soil, mixed with sand and underlaid with pure sand. On this were growing common juniper (*Juniperus communis*), cranberry (*Empetrum nigrum*), wax myrtle (*Myrica cerifera*), blueberry (*Vaccinium*), wild rose and other plants. The planting was completed on June 17. Artificial fertilizers were used to some extent, these comprising nitrate of soda, muriate of potash, superphosphate of lime and quicklime. Sea-bird droppings were plentiful all over the island. In 'Gourdeau Park' the soil was ploughed.

The climate of the island is not extreme. During the years 1898 to 1901 (inclusive) the highest temperature registered by the thermometer was 78 degrees Fahrenheit and the lowest 5 degrees Fahrenheit. The winds, however, are very high and constant and gales are frequent.

At the End of the First Season.

From August 13 to October 3 the weather was very dry, and from September 21 to September 26 a continuous gale blew, ranging in direction from southwest to north, which 'burned' the leaves off the deciduous trees. All the pines, however, except the white pine, looked well and had made a good growth. Some of the spruces survived but few looked promising.

A memorandum prepared by Mr. Boutellier, the superintendent of the island, for the Director of Experimental Farms, on March 23, 1910, summarized the result of the plantations: At 'Station No. 4,' where 2,000 trees and shrubs were planted, he found alive but fifteen Austrian pine, five mountain pine, sixteen Scotch pine, twelve maritime (cluster) pine, two Norway spruce and one black spruce. 'They were all spread out on the ground,' the memorandum runs, 'and were about one foot high. In summer they run up to the top of the rank grass that grows around them, perhaps quite two feet.' At 'No. 3 Station,' where 5,000 plants and shrubs were planted, the only one mentioned in the report is a

specimen of matrimony vine (*Lycium europaeum*), this being in the shelter of a five-foot board fence. At 'Gourdeau Park,' where the greater part of the trees were planted, all that remains is a few specimens of the Scotch broom (*Genista scoparia*), while in the little garden at the main station, where there is some shelter, there remained of the trees planted, one pine (probably *Pinus cembra*), one American elm and one Manitoba maple. The two last mentioned were less than two feet high and were in the habit of growing up rapidly each summer, killing back each winter. The pine was about six inches high and two feet broad.

A danger to be apprehended is that the surface of the island may be wholly swept away (as has already happened in the case of a large part of the original island), leaving an immense area of submerged shoals. In that case the danger to passing vessels would be as great as now, and the possibilities of rescue of shipwrecked persons, (with the life-saving station gone) would be reduced to a minimum.

Is not such a danger worth the spending of many thousand dollars to avoid? On similar plantations (similar, at least, as regards the problems presented by natural conditions) France has spent several millions of dollars, and the single state of Massachusetts some hundreds of thousands.

In the problem presented by Sable Island not only do property considerations enter, but considerations involving the saving of human life. At the least the subject is worthy of continued and persistent experiment, and it is to be hoped that the authorities will not rest satisfied, or torpid, in consequence of the failure of this one attempt.

THE WINNIPEG CONVENTION.

RAILWAY ARRANGEMENTS.

Owing to the fact that the Convention will be held on the day preceeding and the first two days of the Winnipeg Exhibition, delegates attending from points within what is called the 'Winnipeg Exhibition District' will not be required to secure certificates. They will purchase railway tickets at the special rates in force during the Exhibition. It will be necessary, however, that those travelling on these tickets give their names and addresses to the Secretary for the purpose of compiling the railway returns. The Winnipeg District extends from Fort William on the east to the Alberta-British Columbia boundary. (On the Canadian Pacific Railway these rates extend to Golden and Cranbrook, B.C.)

FROM EASTERN CANADIAN POINTS.

Delegates attending from points in Canada from Port Arthur eastward can secure

single fare rates (plus 25c) on the convention certificate plan. To secure these rates delegates will purchase one way first class tickets which will be sold them at the lowest one way first class fare, plus 25c. When purchasing these tickets they must secure a standard certificate which the agent will furnish upon request, and this certificate when signed by the Secretary in the Convention at Winnipeg as showing that the party was a delegate will be honored for ticket through to original starting point free.

Going Dates.—Tickets for going trip by all rail routes will be sold July 3 to 6 inclusive; days of sale via lake and rail routes to be announced later.

Returning.—Standard convention certificates properly filled in and signed by the Secretary of the Canadian Forestry Association will be honored at Winnipeg up to and including July 24 for tickets to original starting point free, except that where lake routes are used additional payment will be required as follows:

Lake Arbitraries.—The following additional amounts to be paid at Winnipeg when certificates are honored for return journey if passengers elect to travel via lake routes, viz.:—(Via C.P.S.S. line or Sarnia N. N. Co., and Port Arthur). Going all-rail, returning lake and rail, \$9.00 additional. Going lake and rail, returning all-rail, \$4.00 additional. Going lake and rail, returning same route \$13.00 additional.

FROM BRITISH COLUMBIA POINTS.

Rate: Certificate plan arrangement; one way first class tickets and standard convention certificates to be issued from starting point to Winnipeg at the lowest one way first class fare plus 25 cents.

Going Dates: July 4, 5 and 6.

Return: Certificates signed by Mr. Jas. Lawler, Secretary, Canadian Forestry Association, to be honored at Winnipeg up to and including July 12th for free return tickets back to starting point with a transit limit of 10 days.

NEW USE FOR SAWDUST.

'Son, why don't you play circus? It's great fun. First you make a sawdust ring.'
'Where'll I get the sawdust, dad?'
'Here's the saw. Just saw some of that cordwood into stove lengths. You can have all the sawdust you make.'

These, then, are a few of the problems to be solved by the forest engineer and I think you will agree with me in stoutly maintaining that he may well be proud of his profession, and that in the practise of it he will find abundant opportunities for the exercise of all the engineering skill he is possessed of.

DOMINION FOREST PARTIES.

A number of the officers of the Dominion Forestry Branch left Ottawa during May for summer field-work in various portions of the West. The plans for work outside of the regular work in connection with the Forest Reserves will take the men through a large area of country which has not been previously traversed by men trained to look for matters pertaining to forestry.

The most important trip will be that of Mr. E. H. Finlayson, Inspector of Fire Ranging. This was briefly referred to in a previous issue of *The Journal*. Mr. Finlayson left Ottawa during the latter part of May and will be engaged for a short time in administrative work connected with the fire-ranging organization which is under his supervision. About the middle of June, however, he will leave Prince Albert on his way north. Travelling by canoe from the end of the Big River branch of the Canadian Northern Railway, he will follow water routes until he reaches the Beaver River. This river is one of the main streams at the head of the Churchill river which flows into Hudson Bay at Fort Churchill. A number of large lakes lie in this district, and some of them will be traversed by Mr. Finlayson's party. They include Lac Doré, Lac la Plonge, Ile a la Crosse lake, Clear lake, Buffalo lake and La Loche lake. A portage over a low height of land leads to the Clearwater River, which will be followed for about one hundred miles until the Hudson's Bay Company's Post at McMurray is reached. This is situated at the confluence of the Clearwater and Athabaska rivers. The balance of Mr. Finlayson's trip will lie along the regular routes of travel of the Mackenzie river valley. Mr. Finlayson plans to go as far north as Fort Simpson, situated at the point where the Liard joins the Mackenzie river. The route of travel follows the Athabaska river to its mouth at Lake Atha-

baska, down the Slave river to Great Slave lake, and from there down the Mackenzie river proper.

The main object of Mr. Finlayson's trip is to obtain information in regard to the country which will make it possible to organize a staff of fire-rangers for the protection of the timberlands of the region. The present organization in this connection provides only protection along the river, although, of course, that covers the area most travelled. There will be this summer two fire-patrol boats, of which one will operate northward from Fort Smith and the other in a southerly direction from that point.

Another matter that will engage Mr. Finlayson's attention is the herd of reindeer, which was transported by the Dominion Government from Labrador. The herd was secured from Dr. Grenfell, who has done much to encourage the introduction of this useful animal into Labrador and Newfoundland. The Dominion Government herd is at present located at Fort Smith and is under the supervision of the Forestry Branch. The reindeer have in the summer been troubled a great deal by the mosquitos and flies, and it is proposed to transfer them to an island in Great Slave Lake.

The reconnaissance survey parties left for the various districts assigned to them during the month of May. Mr. J. A. Doucet with Mr. R. M. Watt as assistant were the first to start off. This party will be engaged in an examination of lands in the valley of the Peace river. This season's work will complete the examination of lands connected with the Rocky Mountains Forest Reserve upon which men have been engaged for the past three seasons.

Messrs. Donald Grieg and T. A. Trebilecock will be working between Lake Winnipeg and Lake Manitoba. Mr. A. B. Connell, with Mr. A. M. Thurston as assistant will examine the Pasquia Hills in the province of Saskatchewan. Mr. G. P. Melrose, of the

University of New Brunswick, with Mr. R. A. R. Campbell as assistant, and Mr. R. K. Shives with Mr. G. S. Laughlin will be working in the vicinity of Battleford and Prince Albert, respectively. The men assigned to this kind of work in the Railway Belt in British Columbia are Messrs. F. B. Robertson, C. R. Mills, E. B. Prowd and H. A. Parker. The two first-named will be the men in charge of the parties.

Mr. W. N. Millar, District Inspector of Forest Reserves for the Province of Alberta, has outlined extensive trips in connection with his inspection work in the Rocky Mountains forest reserve. Mr. Millar spent a very large proportion of his time last summer in the field, but he was able to cover only about half of the very large area under his jurisdiction. The trips that he has planned for the present season will complete his personal inspection of all the Rocky Mountains forest reserve lying south of the Grand Trunk Pacific Railway. The most extensive single trip will be a journey with pack train from Laggan to Fitzhugh.

Prof. R. B. Millar, of the University of New Brunswick, Dept. of Forestry, has accepted an appointment to do consulting work with the Canadian Pacific Railway forest service during the summer.

CROSS TIES PURCHASED IN 1912

A very interesting report on the cross ties purchased in Canada in 1912 has been issued by the Dominion Forestry Branch. Statistics were based on reports received from 51 steam railways and 36 electric railways operating in Canada in 1912.

The total number of ties, 21,308,571, were valued at \$9,373,869. Part of these were imported, but the bulk of the ties used on Canadian railways were cut in Canada. The imports of ties in 1912 reached approximately \$1,697,431, which would indicate that less than one-fifth of the ties purchased in 1912 were imported.

There were purchased in Canada in 1912 a total of 21,308,571 cross-ties; this was an increase in actual numbers of 6,919,347 or a 48.1 per cent. increase over 1911. This increase took place on almost all the rail-

ways in Canada and was especially noticeable on transcontinental lines.

Nineteen different kinds of wood were used with jack pine still leading. The use of each material increased from 1911 with the exception of Eastern spruce and red pine. Balsam fir and Western spruce were added to the list of 1911 and poplar and black ash were dropped.

The use of the cedar tie has varied greatly from year to year. In 1908, 1909 and 1910 cedar ties headed the list although the numbers purchased showed decreases each year. In 1911 cedar ties formed only 10 per cent. of the total and fell back to fourth place on the list. In 1912 the use of this material increased by some 1,898,710 ties and this wood moved up to second place on the list, forming 15.6 per cent. of the total.

Douglas fir has steadily increased in use since 1909, when data concerning its use were first obtained. Oak and the other five hardwoods—chestnut, beech, maple, birch and elm—have also increased remarkably. There seems to be a tendency on the part of the management of older established steam railways to reduce the use of soft, light material for cross-ties, especially where fast trains and heavy rolling stock are used. Some of the Eastern roads have ceased to purchase cedar, pine, hemlock and tamarack ties and use only the hardwoods. The use of imported hard pine has increased with the hardwoods and was used in making 3.1 per cent. of the ties purchased in 1912. Western larch formed 5.6 per cent. of the total number, over a million ties of this wood having been purchased.

The average value of ties, at the point of purchase, increased from 39 to 44 cents in 1912.

It is interesting to note the increased use of hardwoods by steam railway companies. In 1911 woods such as oak, chestnut, beech, maple, birch, elm and black ash together formed only 1.8 per cent. of the ties purchased. In 1912 this percentage increased to 6.7 per cent. through increased purchases of 1,148,578 hardwood ties.

Many Canadian railway companies are now beginning to realize the value of preserving at least a part of their tie material from decay and insect injury. The practice of chemical treatment of railway ties has been carried on by railways in the United States for some years with apparently satisfactory results.

The practice in Canada is just beginning, but it is increasing rapidly with the increasing cost of tie material and the constantly decreasing supply. In 1910 practically no treated ties were used by Canadian railways. In 1911 some 206,209 ties received chemical treatment before being placed in the roadbed. This number, while forming only 1.4 per cent. of the

total number of ties used, was, nevertheless, an indication of the increase in this particular form of conservation. In 1912 1,818,189 ties were chemically treated. This number forms 8.5 per cent. of the total number of ties purchased. Steam railways used 1,798,189 of these treated ties and electric roads used 20,000.

The treated ties were mostly hardwoods, as it has been found more economical to treat the heavier, stronger woods than those which are liable to fail from mechanical wear before they have time to decay. The greatest actual saving by preservative treatment is found in the use of the so-called 'inferior woods,' provided that these are properly protected from mechanical wear. Until the price of the durable woods become excessive the railway companies will not resort to expensive treatment of inferior woods on account of this cost of protecting them from mechanical wear.

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ALPINE CLUB OF CANADA.

The extent to which the work of the Alpine Club of Canada has grown is shown in the issue of a hundred page special issue of the Canadian Alpine Journal, the organ of the Club. The Club, of which Mr. Arthur O. Wheeler, F.R.G.S., is the energetic director, has its headquarters at Banff, Alberta, and the permanent address of the Secretary, Mr. S. H. Mitchell, from whom further information may be obtained, is Sidney, B.C. This issue contains the reports of the party from the Smithsonian Institute of Washington, D.C., which collaborated with the Club in its 1911 expedition to the Mt. Robson region of British Columbia and Alberta in the vicinity of the transcontinental line of the Grand Trunk Pacific Railway. Those who represented the Smithsonian Institute were Mr. N. Hollister, who studied the mammals; Mr. J. H. Riley, who reported on the birds; and Mr. Paul C. Standley, who was the botanist of the expedition. The issue contains a large number of half tone engravings of photographs of scenes and specimens and a map by Mr. Wheeler of the region traversed. Every year the work of the Alpine Club extends and Canadians are thus being made better acquainted with their great mountain heritage.

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CONTENTS:

Page.

Winnipeg Convention	97
Quebec's Planting Operations	98
Railway Fire Protection — Clyde Leavitt	99
Securing the Settlers' Sympathy in Forest Fire Protection	102
Considerations in Woodlot Growing—B. R. Morton, B.Sc.F.	103
In British Columbia—H. R. MacMillan	105
Committee on Uniform Log Rule	108
With the Forest Engineers	110

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The Winnipeg Convention, which begins simultaneously with the issue of this number of the Journal, gives every promise of being a great success. Every quarter of the country is sending a man of note to address the meetings, and the invitations which have been issued throughout the West to those who were thought most interested in the deliberations of the Association are receiving a most hearty response. It is evident that the friends of forest conservation are to be found in every walk and vocation of life, and that the active sentiment for an immediate extension of the work of the Association is universal.

The list of speakers, even in its incomplete state, indicates the advanced nature of the discussions. So far there is promise from the following gentlemen:—

Hon. W. A. Charlton, President Canadian Forestry Association.

Mr. Vere C. Brown, Supt. Central Western Branches, Canadian Bank of Commerce.

Mr. Geo. Bury, Vice-President and General Manager, Canadian Pacific Railway.

Mr. Avila Bédard, M.F., Professor, Laval Forest School.

Prof. F. W. Brodrick, Professor of Forestry, Manitoba Agricultural College, Winnipeg.

Mr. S. A. Bedford, Deputy Minister of Agriculture, Winnipeg.

Mr. R. H. Campbell, Dominion Director of Forestry.

Mr. W. T. Cox, State Forester of Minnesota.

Mr. J. S. Dennis, Assistant to the President, Canadian Pacific Railway.

Mr. W. P. Dutton, President, Great West Lumber Co.

Mr. E. H. Finlayson, Inspector of Fire Ranging, Dominion Forest Service.

Mr. Clyde Leavitt, Chief Inspector, Railway Commission.

Mr. H. R. MacMillan, Chief Forester, British Columbia.

Mr. G. C. Piché, Chief Quebec Forest Service.

Mr. Norman Ross, Chief of Tree Planting Division, Indian Head.

Mr. J. M. Swaine, Assistant Dominion Entomologist for Forest Insects, Ottawa.

Mr. E. J. Zavitz, Provincial Forester, Ontario.

A feature of the convention which it is expected will be warmly appreciated by the delegates is the exhibit of specimens of the woods of Manitoba and of the insects which are parasitic upon them. Mr. F. K. Herchmer, of the Dominion Forestry Branch will have charge of the former, and Mr. J. M. Swaine, of the Dominion Experimental Farms, of the latter.

A special effort is being made to issue the full report of the Proceedings within

a couple of weeks after the convention. This report will contain the discussion as well as the papers, and will give to those who will be unable to attend the meeting the very best alternative possible. In so far as the edition will permit, copies of the report will be sent to all who apply, after the members of the Association and those attended the convention have been supplied.

Quebec's Planting Operations.

Waste Lands Near Lachute Being Reforested.

About forty years ago near Lachute, Que., there were fields devoted to the growing of barley which was transported to Montreal to be used in the breweries there. Prices were good and the farmers raised the same crop for approximately fifteen years in succession. Then a plague of grasshoppers removed a large part of the virile green growth, with the result that the soil, relieved of the great part of its humus and other binding elements, began to drift in a south-easterly direction under the impelling force of the prevailing wind. At the present time these fields resemble a rolling sea. The sand has been hollowed out in the places in which there are no trees or grasses and piled up long distances away to a height of from 10 to 25 feet.

A description of this locality was given in the May issue of *The Forestry Journal* of last year, and an account given of the work of reclaiming this land undertaken by the Quebec Government under Mr. G. C. Piché, M.F., Director of the Forestry School and Chief Forestry Engineer of the Quebec Department of Lands and Forests. The results of that work to date and the new operations which were undertaken this year were seen by representatives of *The Journal* again last month.

Of the 17,000 two-year-old white pine which were planted a year ago

13,000 are at present living, and of the 18,000 two-year-old white spruce 5,000 have come through the year successfully. The experimental plantation of 3,000 white ash and 800 elms was a little more successful, as these, although slightly frozen, have come through the winter practically without loss.

This year the company of foresters who are working on the sand waste have replaced 4,000 pine and 5,000 spruce which had failed with new seedlings of Scotch pine (*Pinus sylvestris*). It has been found that it is practically useless to plant little trees alone on the hills, as the sand blows over them and erodes around them to such an extent that they cannot live. The remedy for this is to plant beach grass, which affords efficient shelter to the young trees to allow their first year's growth after plantation to go ahead without setback.

Frost injured the pines to a certain extent, but the greatest damage came through the severe drought which prevailed during the first half of May. At that time the plants had part of their rootlets enclosed in a frozen soil. The plants were transpiring very much whilst the roots could not supply enough moisture to counterbalance the drying action.

Continued on page 107.

Railway Fire Protection.

By Clyde Leavitt, Chief Fire Inspector, Board of Railway Commissioners for Canada, and Forester, Commission of Conservation.

It is well recognized in theory that railways should themselves be required to take such measures as may be necessary to safeguard public and private property from destruction by fires due to railway operation. This theory has been translated into practice to a far greater degree in Canada than elsewhere on this continent.

It is also becoming recognized by the more progressive railway officials that the extension of the Governmental powers of regulation to cover matters of fire protection is not as a matter of fact a hardship upon the companies, so long as only reasonable requirements are made, but that, on the contrary, such regulation merely makes a necessity of what would in any event be dictated by good business policy, having due regard to the best permanent welfare of the railway companies themselves. A distinguishing characteristic of the modern progressive railway official is his regard for the future interest of his company, in contradistinction to the old-time railroad man, whose sole thought was in so many cases for the present, regardless of the future.

The prevention of railway fires means greatly reduced litigation and damage claims and, inversely, tends toward a much more friendly feeling on the part of the general public toward the companies. It means also decreased loss of the company's property and increased attractiveness of the line from the tourist point of view, thus conducing toward greater revenues. Forest growth in proximity to the track also means in the long run greater supplies at lower prices, of the tremendous quantities of wood material necessary for ties and other uses in connection with railway operation. It means also that instead of barren wastes producing no revenue, large non-agricultural sections of the

country will produce successive wood-crops forever, thus maintaining numerous settlements along the line and constituting a perpetual source of business and therefore of freight and passenger revenue to the railway.

At the end of June, 1912, the total length of railways operating in Canada was over 27,000 miles, leaving the Dominion in the unique position of having the largest railway mileage per capita of population of any country in the world, despite the rapid peopling of the western provinces, during the past ten years. At the same time there were approximately 7,000 additional miles of line actually under construction. A very large proportion of this 34,000 miles of line is subject to the Board of Railway Commissioners.

The powers granted to and exercised by the Railway Commission as to fire protective measures have been gradually modified and extended, culminating May 22, 1912, in the issuance of Order 16570, covering all phases of railway fire protective work. The essential requirements of this Order are as follows:—

(*First.*) The use of fire-protective appliances on coal-burning locomotives, calculated to prevent so far as possible the escape of live sparks or cinders from stack and fire-box. These appliances to be inspected at least once each week by railway employees. Frequent check inspections are also made by the inspectors of the Operating Department of the Railway Commission. The best modern appliances are prescribed, and experience shows that the frequent inspections made by the railways themselves result in the early discovery and rectification of most of the defects in netting mesh or other appliances. In this way the occurrence of fires is very largely prevented, though

not entirely so, as there seems as yet to be no satisfactory appliance that will wholly prevent the escape of live sparks from stacks under extreme conditions.

(*Second.*) The extinguishing of fire, live coals and ashes deposited upon tracks or rights of way outside of yard limits. Fortunately there now seems to be very little trouble from this source.

(*Third.*) The non-use of lignite coal. There are vast deposits of lignite in the prairie provinces, and much trouble has been experienced in the past through fires caused by the use of this fuel on railways. It finally became necessary to prohibit its use entirely as locomotive fuel.

(*Fourth.*) The establishment and maintenance of fire guards in the prairie sections. The application of this requirement has so far been limited to portions of Alberta, Saskatchewan, and Manitoba, where there is danger of grass or stubble

fires. The Chief Fire Inspector is given full authority to prescribe how, when and where fire guards are to be constructed.

(*Fifth.*) Regulation of burning of inflammable material along rights of way. The Railway Act requires that railway companies shall at all times maintain and keep their rights of way free from dead or dry grass, weeds and other unnecessary combustible matter. It has been found that a certain amount of regulation is necessary, in order to prevent the burning of debris at dangerous times by irresponsible employees, thus constituting a serious fire menace.

(*Sixth.*) The last of the special requirements is with regard to the reporting and extinguishing of fires by railway employees. Where the fire danger is not great, the situation is sufficiently taken care of as a rule, by the requirement that conductors, engineers, and trainmen shall take particular pains to report any fires



Snow fence consisting of row of maple trees along railway right of way. Forest planting is gradually replacing the old style of wooden fences to protect railway tracts against drifting snow. Note plowed fire guard to protect trees against fire.



Railway right of way previous to clearing. The Railway Act requires that railway rights of way shall be maintained free from combustible matter.

found burning along the right of way; and that sectionmen and other regular employees along the track shall promptly extinguish any fires reported to or found burning by them. The railway company must employ additional labor if such action is necessary to the extinguishment of a particular fire. It will be noted that the whole field organization of the railway is made a part of the fire-fighting machine.

In order to fix definitely the responsibility for extinguishing a particular fire, the Order provides that any fire starting or burning within 300 feet of the track shall be presumed to have started from the railway unless proof to the contrary is furnished. The burden of proof is thus put squarely on the railway company. The idea is to get the fire out first, and then talk about it later, if necessary.

Where the fire danger is serious, special patrols are necessary. Here, advantage is taken of the provision of the Order that the railway company

shall provide and maintain a force of fire-rangers fit and sufficient for efficient patrol and fire-fighting duty during the fire season, all the details of the establishment and maintenance of such force to be subject to the supervision and direction of the Chief Fire Inspector or other authorized officer of the Board.

This requirement for the establishment of special patrols at the expense of the railways themselves is the most progressive and perhaps the most radical feature of the Order, and constitutes its chief distinguishing characteristic. So far as known, neither the National nor any State Government in the United States has enacted legislation along this line which approaches this so far as placing the burden of fire protection upon the railways themselves is concerned.

As previously noted, the requirements as to the use of fire-protective appliances are enforced through a special staff of inspectors in the Operating Department of the Board.

For the enforcement of the balance of the Order and the inspection of the work of the railway companies, a co-operative plan has been developed whereby certain officials of the Dominion Forestry and Parks Branches, and of the Governments of British Columbia, Ontario, Quebec and New Brunswick have been appointed officers of the Fire Inspection Department of the Board, with authority to deal direct with the railway companies and to vary the requirements up or down as the local conditions at any time or place may require or permit. It is expected that a similar arrangement will be made in Nova Scotia. In this way, a perfectly elastic system of administration is provided, so that necessary protection is assured at a minimum of cost to the railway companies and with a minimum of red tape and loss of time.

A special point is made of relieving railway companies of the necessity for special patrols when weather conditions are such that special patrol is not necessary. This is likely to be the case in the early summer while vegetation is in a green and non-combustible condition.

The gradual decrease of fire danger may be expected to take place through the extension of the use of oil fuel on locomotives. The use of oil-burners has for over two years been in effect on 115 miles of the line of the Great Northern Railway in British Columbia. Along the main and branch lines of the Canadian Pacific Railway in British Columbia oil-burners have during the past season been installed on approximately 338 miles. Similar action has been taken with regard to the 134 miles of the Esquimalt and Nanaimo Railway on Vancouver Island. The present total of oil-burning passenger lines in Canada is therefore at the present time approximately 587 miles. So far, the use of oil fuel has been confined to British Columbia on account of the cheap water transportation

from the extensive oil fields of Southern California. It is however expected that the use of oil will be further extended in British Columbia and probably also into some portions of Alberta.

There are two points which should be emphasized in connection with the question of railway fire protection in Canada. These are the requirement of special patrols by the railway companies, and the establishment of a field organization for the administration of the Order, with full authority in the hands of the local inspectors to take any necessary action without delay.

During the portions of two seasons the plan has been in effect, fire protection has been more efficient along railway lines than ever before, and it is confidently expected that still more satisfactory results will be secured in the future. One of the most satisfactory and most encouraging features of the situation has been the fine degree of co-operation with the Fire Inspection Department of the Board that has existed on the part of most of the railway officials concerned.

SECURING THE SETTLERS' SYMPATHY IN FOREST FIRE PROTECTION.

On the Dominion Forest Reserves, many of which are more or less surrounded by settled regions, the fires which most menace these Reserves are those which have escaped the control of the settlers in clearing land, many of whom underestimate the fire danger, or do not realize the immense damage done by a prairie fire which sweeps into the forest and destroys all the timber in the vicinity.

Consequently, to emphasize the importance of this danger and to secure the settlers' co-operation in eliminating it, has been one of the chief aims of the Dominion Forest Service. The accompanying cuts illustrate one of the most successful ways of achieving this result. These 'fire-posters' as they are called, are printed in a dozen different languages so that no immigrant, whatever his nationality, can plead ignorance of the fire danger. The old



Danger!

Forest Fires

MEAN ACTUAL LOSS TO ALL

WHY waste our own Money and impoverish our Land?

TIMBER PAYS OUR TAXES

If it is destroyed WE PAY the difference.

The Dominion Government wants your help in preventing Forest Fires. The best kind of fire protection is the good will of the people. We want your co-operation.

Get a copy of the law from your local Fireranger and have him explain it to you, THEN follow its instructions.

REMEMBER, FIRE is your own WORST ENEMY

BE CAREFUL WITH FIRE

style of poster contained merely a digest of the forest fire act. The new style of poster asks in a pointed way for co-operation and gives reasons for so doing. It is always printed in large type so that 'he who runs may read,' a decided improvement on the small-typed posters of previous issues.

Another method of securing the settlers' co-operation which has proved successful consists in supplying the settlers in the neighborhood of forest reserves with tool chests, containing in compact form the shovels and other equipment necessary to the successful fighting of forest and prairie fires. Thus, in the event of a fire, no valuable time is lost searching for tools, and the settlers can at once throw this chest into a buggy and proceed to the scene of the fire.

To further facilitate the rapidity with which this co-operation can be effected, the



LOST

A WHOLE LOT OF MONEY—MILLIONS
OF DOLLARS YEARLY—GONE UP IN SMOKE
LARGELY THROUGH CARELESSNESS.

BECAUSE:

SOMEONE left a camp fire burning!

SOMEONE dropped a burning match!

SOMEONE dropped a cigar or cigarette butt
or knocked ashes out of a pipe!

SOMEONE was careless clearing land!

TIMBER CROWS, VALUE CROWS

IF

EVERYBODY IS CAREFUL,

BUT

ONE FIRE MAY SWEEP OUT THE GROWTH
AND THE WORK OF YEARS.

EVERYBODY

BE CAREFUL WITH FIRE

R. H. CAMPBELL,
DIRECTOR OF FORESTRY

ANYBODY DESTROYING OR REMOVING THIS WILL BE PROSECUTED.

look-out stations now being erected in the Reserves have telephone connection not only with the ranger stations, but also with farming communities in the vicinity of the Forest Reserves.

As a result of all this, not only are forest fires more easily brought under control, but also are there less such fires to control, and once the co-operation and protective organization has been perfected to such an extent that all incipient forest fires can be nipped in the bud, the problem of fire-protection on western Reserves will be solved.

G. E. B.

Considerations in Woodlot Growing.

B. R. Morton, B.Sc.F., in Charge of Woodlots, Dominion Forestry Branch, Ottawa.

There is no part of the farm which will pay bigger returns for so little expenditure of time and labour as the woodlot, and there is no part of the average eastern Canadian farm which

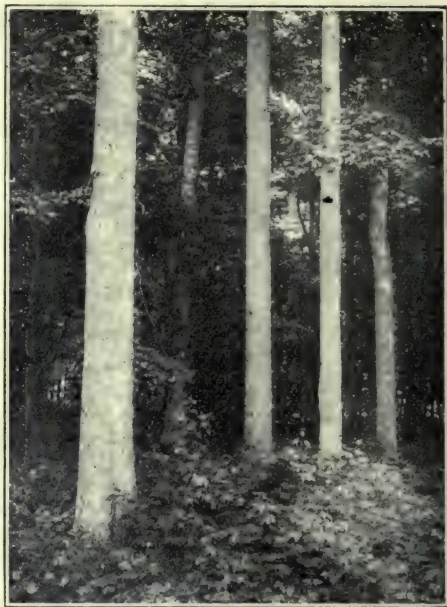
is so much neglected. Under proper management the wood lot will produce about 0.8 of a cord per acre per annum. If cut for fuel this quantity at \$5.00 per cord would represent an

income of \$4.00 per acre, which would be considerably higher if sold for special uses such as fence posts, poles, square timber, etc. Add to this the profits derived from tapping the maples, from 50c to \$5.00 per acre, depending upon the number of maples and the flow of sap, and it is safe to say the annual income from a properly managed woodlot would average about \$7.00 per acre. It should also be remembered that the woods on many farms occupy such waste areas as steep stream banks and stony hill sides, from which the returns would not justify their being used for agricultural purposes.

There is no crop more sure than the wood crop. Few woodlot owners, however, have yet begun to look upon their trees as a crop and although they may realize that the rapid decrease in the supply of hardwoods must increase the profits from their property, there are still those who retain an inherent desire to clear land. It has never occurred to many that it is possible to determine the amount of wood that an acre will produce in a year and that with proper management this amount can be cut year after year without deteriorating the stand.

The typical woodlot of today is not producing anywhere near the amount of material that it might and it never will, until the farmer changes his attitude towards it. To bring the woodlot to its highest producing capacity it is necessary for the owner to keep in mind a model woodlot and in managing, his goal should be this model.

The woodlot which is producing the highest annual returns is one that contains the greatest number of trees consistent with the most rapid development of the quality of wood desired. The trees should be close enough together in their youth to force a rapid height growth and produce clear trunks. When about five years old they should be from 3,000 to 5,000 per acre. This number will gradually diminish until, at ten years of age, the stand will contain from 1,500 to 3,000



Showing two age-classes—mature and seedling. This is an ideal condition for the owner intending to cut clean and allow his stand to grow up again. For the farmer's woodlot the presence of a great number of ages is desirable so that a few trees may be harvested each year.

trees, and at maturity not more than 150 of the original trees will remain. If left to itself this thinning would come about in a natural way, but by proper artificial thinning the growth can be stimulated and weed-trees, such as are undesirable and have low market value, can be removed. The crown of the trees should always touch so that little light may reach the ground and encourage the growth of grass and weeds. The soil should be prevented from becoming hard and baked by the action of the sun. In thinning, no opening should be made in the tree tops which cannot be filled in by the neighbouring trees in three or four years. There should be sufficient number of younger trees which will rapidly fill in any opening caused by the removal of, or accident to, a mature tree. The growth about the exposed margin of the woodlot if kept dense will do much to protect the trees within from being overthrown by wind.

In British Columbia.

Work of Surveys and Fire Protection Going Forward.

By H. R. MacMillan, Chief Forester.

Surveys.

When the Forest Branch was started one of the chief pieces of work was a forest survey of the Province which would show the quantity of merchantable timber in the Province; would establish the boundaries of the land convenient for other purposes, which should be set aside as permanent Forest Reserves and which would serve to bring to light information regarding the resources of the Province which would be valuable for administrative purposes. Last year about 6,000,000 acres were covered by forest survey parties. This year work will be carried out by the District Forester and Forest Assistant in the different Districts as time permits; and in addition the following parties are being sent out to make an examination of Districts considering which information is required.

P. S. Bonney, a Canadian graduate of the University of Washington Forest School, is accompanying an exploration party to the Naas River valley north of Prince Rupert. Mr. Bonney will be out until the end of the year, and by covering thoroughly 1,500 or 2,000 square miles in this valley, will bring to light important information regarding the Forest Resources of this section of the Province, concerning which at present but little is known.

A. K. Shives of Toronto Forest School, has left with a party to do similar work in the valley of the Bella Coola River and eastward along the 53d Meridian. This District is reported to be timbered with the spruce and jack pine forest similar to that of Quebec and Ontario; and a spruce and lodgepole pine forest similar to that on the eastern slope of the Rockies.

E. G. McDougall has charge of a survey party covering the District between the Cariboo road and the North Thompson River from the railway belt north to the 52nd Parallel. Mr. McDougall accompanied an exploration survey party sent out by the Surveyor-General.

Mr. D. Clark of Toronto Forest School, will make an examination cruise of the timber tributary to the Canadian Northern Railway from Tete Jaune Cache south to the Blue River, a distance of 140 miles; from the Blue River south to the railway belt will be examined and cruised by H. G. Murray, a graduate of the Forest School

of the University of New Brunswick. Last year the timber tributary to the Grand Trunk Pacific was cruised in order that such bodies of timber as were sufficiently valuable might be reserved from settlement. Where timber of merchantable value is located on agricultural land within easy access from the railway, such timber will be sold by the Forest Branch as soon as the railway provides a market in order that the land may be opened for settlement.

T. S. Palmer will do forest survey work in the Nelson District.

Axel Gold left Victoria some weeks ago to conduct an exploration party and forest survey of the country from the Nation Lakes across the water-sheds of the Parsnip river to the Peace river. This survey is being conducted with the idea of securing definite information regarding the forest resources of this northern district.

Arrangements will be made by the Forest Branch with the Commission of Conservation to carry on co-operative work in completing the forest survey of British Columbia at as early a date as possible. The forest survey of British Columbia is a matter of national importance as it is popularly supposed that half of the merchantable timber of Canada is in British Columbia and the administration of British Columbia timber is therefore a matter of the greatest interest to the population of all Canada.

Fire Protection.

Fire protection is the most important work before the Forest Branch this summer. The Forest Districts have been organised chiefly with the idea of improving fire protection. Previous to this summer there have been no permanent employees in the fire protection service of British Columbia. This summer permanent Forest Districts have been formed, the areas being from 6,000,000 to 28,000,000 acres each. Each District is in charge of a District Forester who is assisted by a Forest Assistant and a permanent ranger. The permanent staff has been in duty since the fall of 1912 or beginning of 1913. In addition to the permanent organisation Fire Rangers were appointed May 1st to serve for five months through the summer. As the danger of the fire season develops in different parts of the Province arrangements have been made to put on an in-

creased number of patrol men for shorter periods of one to three months.

The chief sources of fire risk in British Columbia are: settlers clearing land; railways; logging operations; and miscellaneous travellers in the woods.

The law requiring all the settlers to secure permits from employees of the Forest Branch before setting out fires between May 1st and October 1st has become part of the custom of the country, and has produced such excellent results that the Forest Branch is securing the co-operation of the settlers of practically all the districts. The increase in the number of fire-wardens this year has also greatly facilitated matters in this respect.

A great source of fire risk during British Columbia's present stage of development is the construction of railways; the Forest Branch is assuming that the expense, following upon the adoption of regulations framed to reduce the fire risk, is just as legitimate a part of the expense of railway construction as the expense incurred in clearing or grading the right-of-way. The Forest Act and the Railway Act of British Columbia were drawn up on the above assumption. The most important regulations under the two Acts quoted require:

A. That railway companies in construction work must clean up all slash within 200 feet of the railway.

B. That railway companies in construction work must clean up all slash caused by the cutting of timber; the building of camps; the construction of 'tote' roads; or in any other manner

C. That during construction the railway company must maintain a patrol satisfactory to the Forest Branch and must pay all expenses of that patrol or of extinguishing any fires starting from the construction work.

The Forest Branch has endeavored to secure compliance with the above regulations from contractors throughout the Province. As a result, contractors on the Grand Trunk Pacific, Canadian Northern Pacific and Canadian Pacific Railway lines have piled or burned brush on the areas logged over by them in securing ties and other timbers; and have cleaned up in a satisfactory manner all the slash thrown off the right-of-way into the timber adjoining roads and railway right-of-way. Where contractors have been unwilling or inclined to refuse to carry on this work, they have finally agreed, when faced with actions in the courts or with cancellation of their various timber privileges. As railway contractors have never met with the enforcing of such regulations elsewhere in Canada it is not to be wondered at that some of them rebel.

The Forest Act provides the Forest Protection Fund for both fire patrol and per-

manent improvements. During the past winter and spring officers of the Forest Branch, assisted by two telephone experts have been locating telephone lines; the construction of several lines have been undertaken chiefly in the Cranbrook and Vernon Districts. In several instances the expense is being charged between the Forest Branch and the owners of timber lands or companies interested in watershed protection. The municipalities of Armstrong and Vernon have made grants to assist in the construction of a telephone line to a 'look-out' point which commands a view of the watershed upon which these two towns depend for their water supply. A similar co-operative arrangement is under consideration at present between the Forest Branch and the Irrigation Companies and the towns of Kelowna and Penticton.

The Forest Branch has also under consideration at present the opening up and improving of trails which will increase fire protection. Motor boats have been built for fire patrol on Arrow Lake and Kootenay Lake. Canoes are being purchased for patrol on the Fraser, Columbia and Thompson rivers and ten motor boats have been secured for fire and timber inspection on the Coast.

The Forest Branch has taken up with the lumbermen of the Province the question of slash burning. It has been found by experiment that slash burning on logging operations in the different forests of the Province is practicable; costs very little money; and greatly increases fire protection. Arrangements have been made with a number of the most prominent logging companies in British Columbia to have their logging slash burned over this spring, and such burning as has been carried on up to date has proven very satisfactory and has greatly decreased the fire danger. Figures on the cost of slash burning are being collected and a statement will be issued this fall dealing with this subject. It is found that railway contractors who burned their slash after tie cutting operations this spring did so at very little expense and removed any serious fire hazards.

A co-operative agreement has been made with the Dominion Entomologist providing for an investigation of the economical forest insects of British Columbia. This investigation will be carried on this summer by Mr. J. M. Swaine.

The question of an efficient staff is, perhaps, the most vital problem that has to be handled at the present time—a staff that understands its business and is prepared to attend to it.—R. H. Campbell, *Director of Forestry for Canada, at the Annual Meeting of the Commission of Conservation.*



Quebec Government plantations at Lachute, Quebec.—Foresters at work planting trees.

Continued from page 98.

This drought had the effect of "burning" some of the foliage in the western extremity of the plantation. It is noticeable, however, that the white pines, although slightly withered at

the tips of the leaves are still vigorous in the leaf axils and in the terminal buds. The main loss to the spruce seedlings, it is thought by the planters, was due to the fact that they



Quebec Government plantation at Lachute, Quebec.—A bunch of beach grass, which is found useful in holding the soil so that young trees may get a start. Note the sand around the roots. The Quebec Government has ordered two kilogrammes of this seed from France.

were too young and too tender to endure the hard conditions in which they were placed. Also, Mr. Piché, the Chief Forester, thinks that enough care was not taken by some of the planters, who exposed to the air the fine rootlets which should have been kept under good cover or in a bucket of water.

Last year a total area of twenty-one acres was planted. This year with twelve students working at the rate of about eight to ten thousand seedlings a day twenty-five to thirty acres were planted. Mr. Laliberté, under whom the work was done, estimates that the cost was approximately \$15 per acre, but as this was incurred in a short time and the overhead expenses were great, it is far in excess of what can be ordinarily accomplished. The cost, if the planting were undertaken on a large scale, should be only about five or six dollars an acre. It is well within the range of possibility that a large sand area of some thirty-six square miles near the present plantation may be planted up in the course of the next few years by the Government. It is a distinct menace to the surrounding country, and the experiments already carried out, including those of farmers between the bad lands and the town of Lachute, show that it is quite possible to prevent altogether the drifting of the sand.

The Quebec Government is anxious to carry on this work for many reasons, chief of which, in addition to that of subduing the drifts, is that it provides an object lesson and a considerable amount of encouragement to farmers who plant up their own lands. In the Government nursery at Berthier, Que., there are millions of seedlings available for such enterprises, and Chief Forester Piché is anxious to place them in good hands. At the present time the arrangement between the farmers and the Government is that the Government buys the land at \$1 an acre, plants it with trees and undertake to return it to

the owner if he cares to buy at the end of eight or ten years for the cost of production. In no case is the purchase price in this second instance to be over \$10 per acre.

REPORT OF COMMITTEE ON UNIFORM LOG RULE.

Your Committee on *Uniform Log-rule* begs leave to report as follows:

All members of the Committee are agreed that a uniform unit rule of measurement of logs is desirable for the whole Dominion, but the practicability of the introduction of such uniform measure at the present time is considered doubtful, or at least beset with difficulties.

The first difficulty in introducing a uniform log-rule lies in the fact that, unlike lumber, logs have a local market, and the market adjusts itself to the peculiarities of the log-rule in use in the locality without very serious detriment to all parties concerned, as long as the price is made in proportion to the greater or less liberality of the log-rule; there is, therefore, a natural tendency of conservatism to keep up the usage.

A second reason rendering uniformity difficult to attain is the fact that each province has adopted a rule and its licenses are based on it, hence the same conservatism animates the governments, although there is no doubt that, for instance, Ontario loses, wherever small logs form an essential part of the cut, by the adoption of a log-rule which is illiberal to the seller of small logs, and Quebec, having a few years ago changed its usage, gains by a rule based upon better practice.

There are now at least five different log-rules in practice, which vary by from 10 to 50 per cent. and more in giving contents of logs, according to the assortment of the latter. It can therefore happen that a lumberman, logging in Quebec, Ontario and New Brunswick at the same time, pays for the same sized log, say a twelve inch log twelve feet long, if the stumpage dues were \$2, ten, twelve or fifteen

cents. Of course, the limit-holder can take care of this difference in the bonus which he pays additionally.

In order to meet the difficulty in securing a fair measurement of small logs the proposition is advanced by one member of the Committee, to have all small logs, say below nine inch diameter at the small end, piled and measured by the cord, or else to measure at least by carefully constructed tables which give the number of logs of varying sizes, diameter and length, that go to a cord.

This would result in a great reduction in the cost of scaling, especially as small logs form more and more the bulk of the cut, at least in the Eastern Provinces.

It should be thoroughly understood that log-rules are not really actual measurements, but a mixture of measurement plus a judgment, namely, as to how much saleable material can be cut from the given cubic contents. It is, of course, well known that this result at the mill depends on a great variety of conditions, such as the size and character of the timber, the character of the mill and saw, the skill of the sawyer, the kind of lumber to be cut, and various other variable conditions.

The only absolute measurement—as absolute as anything in such a variable material as logs can be—is the cubic contents.

It would appear, therefore, desirable and from many points of view eminently practicable to make the cubic foot (or cubic meter) the unit of measurement, leaving entirely to the logger the judgment which log scale fits his case, in order that he may produce a satisfactory result from a given cubic log content.

For forestry purposes, *i.e.*, for the purpose of studying rate and amount of production of wood material, a uniform unit of measurement is absolutely necessary, and cubic contents alone, measured by the cubic foot or cubic meter, are acceptable. Hence the present necessity of having to

translate various log-rules into cubic contents is a very considerable drawback and impediment to progress in developing forestry knowledge.

The only way in which a uniform log-rule can be expected to be adopted is by conference of the provincial governments and their agreement as to the fairest rule. At least the eastern provinces which handle timber of more or less the same description could, it seems, very readily come to an agreement to use one log-rule.

No attempts have been made by the Committee to bring the matter to the attention of the provincial governments.

The effort, however, when any change is contemplated, should be at once to press for the adoption of the cubic foot, or better still of the cubic meter; tables giving contents of logs of different diameters and lengths being now in existence in either measure.

(Signed) B. E. FERNOW, *Chairman*.
JUDSON F. CLARK.
G. C. PICHE.
ALEX. McLAURIN.
ELLWOOD WILSON.

In these days when there are numerous claims of alleged 'rain-makers,' who propose to bring down moisture from the clouds by explosions of dynamite, etc., it is rather interesting to know that Dr. Fernow, Dean of the Faculty of Forestry, Toronto University, was the first official rain-maker of the United States, that is to say, Dr. Fernow was instructed to investigate the possibility of causing rain by artificial methods, and he was particularly to investigate whether it was true that great modern battles were always fought in heavy rain-storms caused by the discharge of artillery. Dr. Fernow's investigations led to a report of an entirely negative character, that is to say, he found that there was no truth in the report that great battles were always fought in rain, nor did he find that the discharge of ordnance or bombs had any perceptible effect on the precipitation of moisture.

With the Forest Engineers.

(Furnished by the Canadian Society of Forest Engineers.)

Mr. Ellwood Wilson, Superintendent of the Forestry Division of the Laurentide Co., Grand'Mère, Quebec, reports an interesting budget of news this month.

It is this company's intention to plant up its waste lands as fast as stock can be raised. Buying two year old stock, the total cost of planting has not exceeded \$8.00 per acre.

Mr. Wilson has just returned from a visit to the Provincial Government's nursery at Berthierville under the general direction of Mr. G. C. Piché and found a most excellent plant and very interesting experiments. *Pinus ponderosa* and *Abies nobilis* have been grown successfully. Mr. Roy and a party of students were busy sowing and are to be complimented on their good work.

Mr. Wilson has a nursery well started, which will have, next spring, about 50,000 trees (Norway spruce, white spruce, white, Scotch, jack and red pine and basswood). Some four years ago about \$2,000 white, Scotch and jack pine were set out and are now from four to eight feet high. Last year 10,000 Scotch pine were set out and this spring 10,000 Norway spruce and a few hundred larch and Black Hills spruce were planted.

Mr. Perrin, of the Shawenegan Water & Power Company, is considering planting of some of the company's lands.

Mr. A. H. D. Ross writes the Secretary in enthusiastic terms of his work in the West this summer. Much of the work is along technological lines.

Mr. J. R. Dickson has been transferred to the Head Office of the Branch at Ottawa, and is "getting the glad hand" from many old friends in the Capital.

Mr. E. J. Zavitz, Forester of the Ontario Department of Lands, Forests and Mines, has the following to say of the work he plans during this summer:—My chief work at the present time, and I expect all this summer, will be organizing fire protection for the Dominion Railroad Board in connection with Order 16570. Also I am spending most of my time travelling in the North Country and becoming acquainted with local conditions and the men already connected with the Department. My work this summer is chiefly in the form of preliminary survey.

Dr. C. D. Howe, of the Faculty of Forestry, University of Toronto, is continuing the work carried on under the Commission of Conservation in Central Ontario during the past summer. Dr. Howe is investigating all forest conditions, paying particular attention to land classification and reproduction. Assisting Dr. Howe in his work are several students in forestry in the University.

J. H. White, M.A., B.Sc.F., Faculty of Forestry, University of Toronto, is making an investigation of conditions on the Dominion lands in Manitoba, Saskatchewan, Alberta and British Columbia, both within and outside of Reserves, with a view to ascertaining what methods should be employed to deal properly with brush and to secure the best possible silvicultural practice. The work is under the direction of the Commission of Conservation. Mr. White's report will be made in October. Writing under date of June 8, he says:—"Leaving this week for a three weeks' trip through the Clearwater and Bow River Forests — which during this month will probably be a wet one."

GOV. SULZER BELIEVES IN TREE PLANTING.

'If I had my way I'd make every man in the State of New York plant a tree every month,' said Gov. Sulzer at a hearing on bills appropriating \$310,000 for the New York State College of Forestry at Syracuse University.

'I have always planted trees,' said the Governor. 'When I was a boy back on the farm, every rainy day, when there was nothing else to do, was spent in the woods. My father taught me to dig up little trees and to plant them along the road.'

'When people pass that farm nowadays they exclaim at the beauty of the elms and the maples. My father was forty years ahead of his time on forestry. That was practical forestry and that is what I want the people of New York to learn and practice.'—Paper, Inc.

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PLACING VALUATION ON YOUNG TREES.

(Southern Lumberman, Nashville, Tenn.)

For the first time the courts of the country have placed a valuation upon young trees on land that has been reforested. The case was not an important one and there was but little money involved. But it is a precedent.

The United States Government brought suit against the Missouri & Northwestern Railroad for damages for timber destroyed by fires originating from sparks from a locomotive. A United States District Court allowed a damage of \$12 an acre. Only ninety-two acres were destroyed.

This is the first time that a court in the United States has decided that trees of such immature growth as those involved in this case have a value which may be determined and for the destruction of which damages may be estimated and allowed. The basis of the valuation of the reproduction was the figures derived from the actual planting operations carried on by the Forest Service in the Black Hills, South Dakota, during the past season, in which 1,500 acres were reforested by seeding.

In line with this decision is the recent settlement by compromise of a case against the Burlington Railroad Company for damages caused by fires in the Galena district of the Black Hills. By this settlement the United States receives the full amount of the estimated damages, part of which was for injury to 300 acres of reproduction valued at \$6.66 per acre.

THE WASTE OF WOOD.

We have destroyed the forests that we might build millions of wooden houses of a most flimsy sort, which every now and again give us a Chicago fire or a San Francisco holocaust. We burn a greater quantity of the product of man's labor in America every year than was destroyed when Nero celebrated the destruction of the capital of the world. And we, too, fiddle and dance through it all.—Toronto Globe.

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CONTENTS:

Page.

Delegates to Winnipeg Convention (photo)	114
The Convention in Winnipeg	115
Forest Fire Legislation	117
Quebec Forestry Department	119
Government and Loggers Co-operate in Slash Disposal	120
Havoc by Forest Fires	122
Timber Products Statistics 1912	123
International Bureau of Forestry	124

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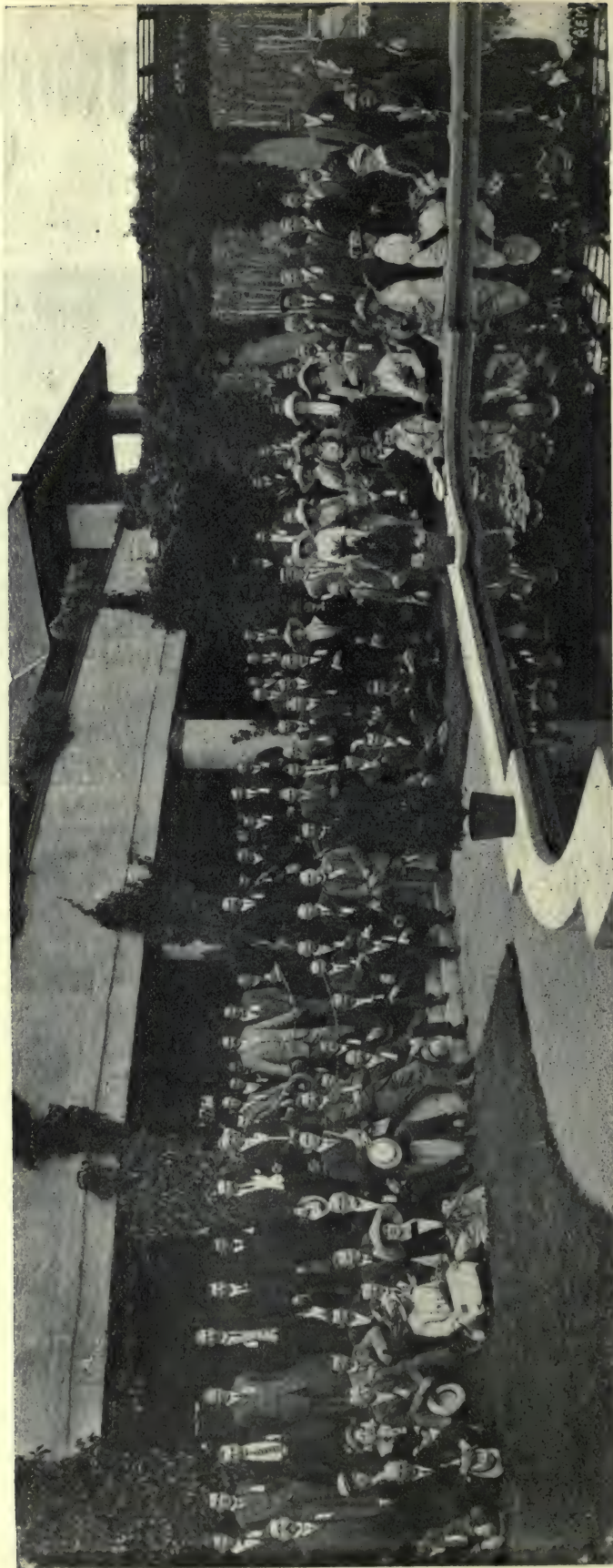
HON. W. A. CHARLTON.

President of the Canadian Forestry Association, who presided at the Winnipeg Convention, and opened the Winnipeg Industrial Exhibition.

HONORED IN WINNIPEG.

At noon on Monday, the opening day of the recent Convention, the Winnipeg Canadian Club entertained Mr. R. H. Campbell and Mr. James White, each of whom delivered a short address on the resources of Manitoba. Mr. White gave an outline of the geological formations and the water powers, and prognosticated a marvellous increase in the productivity of the province through the development of the latter. Mr. Campbell touched on the forest wealth, and predicted with firm conviction that if Manitoba would take reasonable care with her forests, there could be a revenue as great as that of the agricultural products, derived from the wood material.

On Tuesday afternoon, July 8th, the Hon. W. A. Charlton performed the ceremony of opening the Winnipeg Industrial Exhibition, one of the great annual features of the city. Mr. Charlton delivered a short address on the subject of Winnipeg's growth and the general development of the West.



Delegates to the Winnipeg Convention photographed in the Italian garden of the pavilion in Assiniboine Park, Winnipeg, where the City Council tendered a complimentary luncheon.

The Convention in Winnipeg

Meetings in the Western Metropolis Create Great Interest.

Manitoba has been famed in the past for her wonderful resources of wheat. However, if the spirit of the addresses at the fifteenth Convention of the Association held in Winnipeg on the 7, 8 and 9, of last month can be taken as a criterion it is evident that the West will also before long loom large among the sisters of confederation in the production of forest wealth as well. The Convention was a success in every way, and was particularly beneficial to the forestry movement in general, in that its first meeting in a country which was supposed to be less interested in the problem of forest conservation than any other part of the Dominion, was found to be abounding in the spirit which will go far in the future to make forestry a live issue in which all legislatures and the people as a whole can take an active interest.

The provincial and civic bodies took the keenest interest in all the proceedings, and the press of the city and province devoted columns of space both in news and editorial sections to the objects of the Association.

The meetings were held in the spacious hall of the Industrial Bureau on Main street just a few steps from the corner of Portage avenue, the greatest business street in the West. All the facilities of the Bureau were placed at the disposal of the Association and every opportunity afforded for the proper handling of arrangements.

The subjects dealt with were of the greatest importance to Central Canada, and the interest in all the meetings was unusually well sustained. As the report of the Convention is now in the hands of the printer with the object of getting it distributed to members of the Association at the earliest possible moment, detailed reference to each of the papers is reserved until the next issue of *The Journal*.

A feature of the Convention which had direct appeal and effect among thousands of citizens was the exhibit of native woods prepared by officers of the Dominion Forestry Branch and placed in the main entrance of the Industrial Bureau. Every day the Bureau was thronged with visitors, and it was noticed that the woods exhibit was undoubtedly the centre of

attraction. The remark "wouldn't have believed it" was the most common among the admirers of the collection. There were twenty different species shown, some of which were wonderfully well developed. Burr Oak 33 inches in diameter, Red Pine 19 inches, Jack Pine 19 inches, Cottonwood 42 inches, White Spruce 40 inches, were a few of the larger specimens. There were some samples also of the finished products, such as lumber, cooperage, excelsior and pulp.

The exhibit of insects parasitic upon the woods of Manitoba, in charge of Mr. J. M. Swaine, was placed in the Convention Hall and was much appreciated by all. Mr. Swaine's paper, which was distributed during the Convention, gave the delegates a clear idea of the depredations of the pests.

The opening session, on Monday evening, July 7th, was attended by a crowd which completely filled the auditorium. On the platform were Sir William Whyte (in the chair) Hon. W. A. Charlton, His Honor, Lieut. Governor D. C. Cameron, Hon. George Lawrence, Minister of Agriculture for Manitoba, His Worship Mayor Deacon, Mr. John Stovel, President of the Winnipeg Board of Trade, Mr. Wm. Grassie, Vice-President of the Industrial Bureau, Mr. R. H. Campbell Dominion Director of Forestry, Mr. James White Secretary of the Commission of Conservation and Mr. J. E. Rhodes of Chicago representing the American Forestry Association. Following a short speech of introduction by Sir William Whyte, His Honor the Lieutenant Governor opened the Convention, with words of welcome which betokened the warmest of sympathies with the efforts of the Association. His Honor dwelt upon the extension of the boundaries of the Province of Manitoba and expressed the opinion that the forest wealth of the West would rank high in the country in the future.

Hon. George Lawrence extended a warm welcome to the Association and invited all to be guests of the Government in a trip to the new Agricultural College at St. Vital on Wednesday. Mayor T. R. Deacon added the welcome of the people of Winnipeg, and wished the Association every success in its efforts. His Worship greatly deplored

the devastation through fire. "I have been on every river of importance between the Lake of the Woods and the Rocky Mountains and, frankly, I do not know where the timber is. The Mayor wished to see the ranging systems of the country, particularly of Ontario, whose resources he thought sufficient to stand considerable expenditure, materially extended. Mr. John Stovel extended the welcome of the Winnipeg Board of Trade, and Mr. Wm. Grassie bespoke for the Industrial Bureau the interest which men of the Central West felt in the progress of the forestry movement.

The Hon. W. A. Charlton, President of the Association expressed the grateful feelings of the delegates for the kindnesses shown. The wonderful developments within the country, Mr. Charlton said, meant great and permanent prosperity if we would only husband properly our natural wealth. Mr. J. E. Rhodes, the distinguished representative of the American Forestry Association, followed with greetings from across the border, and hopes of extensive co-operation between conservationists the continent over. Mr. Rhodes paid a unique tribute to Canada's possibilities in proper management of her forests. 'We look forward to your practising scientific forestry before we do,' said he, 'because of the method of holding forest lands.'

Mr. E. T. Allen, from the Western Forestry and Conservation Association followed: 'The man who stays at home from a meeting of this kind in the course of two or three years finds himself in a sort of backwater' said Mr. Allen. Mr. R. H. Campbell, Dominion Director of Forestry, spoke of the 'forest as a bank account,' and, 'said Mr. Campbell, 'we have drawn on our capital very heavily, and we must make a heavy capital expenditure to get back to the position where we were and where we can again draw regularly an income equal to that which we previously drew.' Mr. James White spoke of the work of the Commission of Conservation in relation to the forests. He said that our wood supplies had been greatly over-estimated and that he hoped the United States would not look to Canada, as Mr. Rhodes had suggested.

A letter of regret at inability to be present was read from Hon. W. J. Roche Minister of the Interior. Dr. Roche wrote that he had intended attending, but was prevented by the accumulation of work which he found awaiting him at Ottawa upon his return from England.

On the second day the Association turned immediately to the program of papers and entertainment, which was as follows:

TUESDAY, JULY 8th.

(Morning Session.)

- 9.30—Hon. W. A. Charlton—President's Address.
 Appointment of Resolutions Committee.
 Mr. R. H. Campbell, Dominion Director of Forestry—"Manitoba a Forest Province."
 Mr. E. A. Sterling, Director, American Forestry Association — "Progress of Forestry in the United States."
 Mr. W. T. Cox, State Forester of Minnesota—"Rate of Tree Growth."
 Mr. E. J. Zavitz, Provincial Forester of Ontario—"Forestry in Ontario"
 Mr. W. P. Dutton, President Great West Lumber Co.—"Central Western Forest Conditions."
 Mr. J. M. Swaine, Entomologist for Forest Insects, Dominion Experimental Farm, Ottawa — "Insect Problems in Canadian Forests."

(Afternoon Session.)

- 2.30—Mr. George Bury, Vice-President Canadian Pacific Railway Co. — "The Railway and Forest Protection."
 Mr. Clyde Leavitt, Forester for the Canadian Commission of Conservation — "Brush Disposal in the Adirondacks."
 Mr. H. R. MacMillan, Chief Forester of British Columbia—"Forestry Progress in British Columbia."
 Mr. E. H. Finlayson, Chief Fire Inspector, Dominion Forestry Branch—"The Fire Acts of Manitoba, Saskatchewan and Alberta."

(Evening Session.)

- 8.00—Mr. J. S. Dennis, Assistant to the President, Canadian Pacific Railway, and Chief of Natural Resources Department—"Why the Railroads are Interested in Forestry."
 Mr. Vere C. Brown, Superintendent of Central Western Branches, Canadian Bank of Commerce—"Some Practical Aspects of the Forestry Movement."
 Mr. E. T. Allen, Forester of the Western Forestry and Conservation Association, Portland, Oregon—"Co-operation and Extension in Forestry."

WEDNESDAY, JULY 9th.

(Morning Session.)

- 9.30—Mr. Norman M. Ross, Chief of Tree Planting Division, Dominion Forestry Branch—"Review of the Work of the Tree Planting Division."
 Mr. S. A. Bedford, Deputy Minister of Agriculture for Manitoba — "Farm Hedges."
 Mr. F. W. Brodrick, Professor of Forestry, Manitoba Agricultural College—"Educational Aspects of Forestry."

(Entertainment.)

- 11.00 — Electric Cars leave Industrial
 (Continued on page 125.)

Forest Fire Legislation.

Final Report of Committee Published.

(At the annual meeting Dr. B. E. Fernow, on behalf of the committee, presented the following report, the printing of which was delayed until some details were completed.)

Your Committee on Forest Fire Legislation can report with gratification the developments of the past year; highly important progress in all parts of the Dominion in coping with the fire fiend having been made.

Early in the year the Federal Board of Railway Commissioners held a number of public hearings at Ottawa and Toronto, at which your Association, your Committee, the Commission of Conservation, the Government of British Columbia, as an important moving spirit, and representatives of the various Railroad Companies were heard.

At the request of the Board the Chairman of your Committee, acting at the same time as representative of the Commission of Conservation, formulated the principles upon which the Board should proceed in legislating for protection against fires arising from railroads.

The final result of these hearings was the issuance of a most comprehensive order (No. 16570) covering every phase of the subject, and especially providing a thorough organization with a Chief Fire Inspector at the head, who acts at the same time as Forester to the Commission of Conservation.

It may be said that this legislation is the most advanced for this phase of the subject on this continent, covering under one authority probably not less than 22,000 miles of track.

The organization has been vigorously put in order by the Chief Fire Inspector. The main principle of the organization is that it delegates discretionary power to the Chief Inspector, which is necessary on account of the great variety of conditions to be

met with on such a vast territory. Another feature of the organization is the co-operation with other agencies like the federal and provincial forest services or provincial governments by appointing their officials in charge of fire protection as local inspectors, also to some extent with discretionary powers, for the Railway Commission.

It is also to be noted with satisfaction that the Canadian Pacific Railway Company and the Great Northern Railway Company have installed oil-burning locomotives on portions of their lines, and are likely to extend the operation of such, thereby reducing the danger from this source of forest fires greatly.

Unfortunately, the jurisdiction of the Board of Railway Commissioners does not extend over all the railways, some of the provincially owned or chartered and the Intercolonial and Transcontinental railroads being outside of its jurisdiction. As to the latter, it would appear a most incongruous and illogical situation if these federally owned or constructed lines should continue to remain without an organization similar to that which the government now imposes upon the privately owned lines. These roads are managed by special co-ordinate commissions, and hence are beyond the influence of the Railway Commission. It is hoped that these commissions will soon adopt similar methods as are detailed in Order 16570.

The provincially chartered railways form only a small fraction of the railway system, and are subject to the provincial laws for fire protection, which in Quebec under the Public Utilities Commission's Order is almost identical with the Railway Board's Order, and in most of the other provinces this service is quite

well attended to. Nevertheless, the Chief Fire Inspector has busied himself to secure co-operation with the provincial governments for further improvement, and such co-operation has in several cases been already secured. In Quebec, for instance, this co-operation is now perfected, and all railways, except the two federal roads, are under the same rules, with the Provincial Fire Inspector at the same time an officer of the Railway Commission.

This phase of the forest fire problem — protection against railway fires—is in a good way of being permanently settled, when the two federal roads are brought under the operation of a system like that of the Railway Commission.

Brush Disposal.

In the first report of this Committee the propriety of looking into the question of brush disposal in the slashes of the loggers was intimated. Since then the Ontario Government has tentatively licensed some timber limits with the condition that the brush be disposed of.

The Committee would accentuate again that the manner of brush disposal, namely by merely lopping, or by burning, and the method of procedure must vary according to conditions in each case, and that there may be cases when neither of these precautions are of practical value, or the cost not in proportion to the benefit. Hence discretion in prescribing the condition of brush disposal is needful. It is very easy to bring condemnation and the charge of impracticability upon the proposition of brush disposal by injudicious method of application.

Lately an inspection of the result of lopping in the mixed stands of hardwood and spruce in the Adirondacks was made by authorities, including members of the federal Forestry Branch and the Forester of the Commission of Conservation, and a report of the satisfactory results and

practicability of the method is to be looked forward to.

We may anticipate briefly the information, that logging slash constitutes the most serious fire menace in existence; that brush disposal is a practicable and feasible method of minimizing fire danger, though secondary to patrol; that the methods of brush disposal to be adopted in any particular case can be determined only by careful consideration of all the surrounding conditions; and that where brush burning is practicable both financially and silviculturally, this is the most efficient means of reducing the slash menace, but that where brush burning is not practicable for any reason, the lopping of tops may be advisable. The latter is especially applicable to spruce and cedar operations in the east, but even here lopping may not always be necessary.

These precautionary measures should, of course, be supplemented by other systematic attempts to reduce fire danger and to limit fire damage. There is always room for further perfection of any organization.

The Committee also desires to call attention to the claim of the Dupont Powder Works, of the value of dynamite for trenching in fighting forest fires. The claim is that a trench six feet wide and two to two and one half feet deep may be excavated by placing cartridges of dynamite on top of the soil two feet apart at the rate of 300 feet in 15 minutes.

A very decided attempt at organizing the protective service was made by the Forestry Branch, some 300 miles of trail and 100 miles of telephone lines having been constructed. Extension of the fire ranging into the Yukon would appear a matter deserving immediate consideration.

The new forest service of British Columbia will devote itself for the present mainly to solving the forest fire problem.

When the forest fire services of the provinces which own timberlands

shall have been perfected for the protection on their own limits, there still remains the necessity for the protection of municipal and private lands.

For this the organization in part inaugurated in the Province of Nova Scotia may be taken as a starting point, namely a service based on the payment of a certain tax in proportion to the holdings, local fire-wardens paid when on duty, organized under a provincial head, and obligation of citizens to assist in extinguishing fires.

More effective, however, under other conditions, may be found the organization of local associations for protection against fire, such as the Committee referred to in its first report.

One such Association was formed last spring in Quebec, the St. Maurice Forest Protective Association, manager, three inspectors, and fifty rangers extended protection over 7,000,000 acres of limits. The cost is met by an assessment of one quarter cent per acre upon limit-holders, the Provincial Government contributing \$3,000. During the first season of

its existence, ninety-seven fires were extinguished, only one of which running in a slash assumed any considerable proportion. The construction of lookout stations, telephone lines and trails has also been begun by the Association. The Committee, one of whose members has been largely instrumental in the formation, desires to record its appreciation of this initiative, and hopes that this method of meeting the trouble will find widespread imitation as the most hopeful one.

In conclusion, the Committee ventures to suggest its continuance for the purpose of assisting in similar efforts and of recording progress from year to year in the development of this most important phase of the forestry problem.

(Signed) B. E. FERNOW, *Chairman*.
JUDSON F. CLARK.
F. DAVISON.
W. C. J. HALL.
G. C. PICHE.
THOMAS SOUTHWORTH.
ELLWOOD WILSON.

MUCH ACTIVITY IN QUEBEC FORESTRY DEPARTMENT.

Mr. Avila Bedard, assistant to Mr. G. C. Piché, Chief Forester, left by the Megantic for Europe, where he will study the management of forests and measures employed to combat insects in France, Belgium and Switzerland.

The engineers of the Forestry Department are at work as follows:—

Mr. George Boisvert has just returned from an exploration trip to the sources of the Kedgwick, Mistigouche and Metis Rivers, where he found extensive forests, accessible and easy to develop.

Mr. L. D. Marquis is taking an inventory of the forestry resources in the basin of the Assametquagan River in the Metapedia Valley.

Mr. Felix Laliberte will leave shortly to go and study the general conditions and the forestry resources in the basin of the Mistassini River in the Lake St. John district.

Mr. Ernest Menard will visit the basin of the Peribonka River.

Mr. Picard will go to Abitibi to make and

review a study of the Migiskan and Bell Rivers.

Mr. Henri Roy will continue to make the classification of the lands situated north of the Quinze River.

Mr. Henri Keiffer, assisted by Mr. Picard, will classify in the townships and counties of Terrebonne and Labelle.

Mr. Barromee Guerin will work in Beauce to complete the inspection of lots and to classify vacant lots.

—*Pulp and Paper Magazine.*

NOVA SCOTIA LUMBERING.

The cut in Nova Scotia this season only amounts to 60 per cent. of the normal. Short hauling season and soft weather forced a curtailment of operations. Mr. W. G. Clarke, a leading lumberman of the province, stated recently that Nova Scotia lumbermen would have to change their methods and use logging methods not dependent on snow. The shipments have decreased and prices stiffened about \$1.00.

GOVERNMENT AND LOGGERS CO-OPERATE IN SLASH DIS- POSAL.

The Government of the Province of British Columbia is doing much to create on all sides a full confidence in the idea that the proper disposal of logging slash is essential to the permanence of the lumbering industry. Herewith is a letter sent by Chief Forester MacMillan to all loggers in the Province.

I wish to request for the Forest Branch your earnest co-operation in an effort to solve the problem of the disposal of the slash resulting from logging operations.

Owing to the great density of the timber stands on the coast and in portions of the interior of British Columbia, to the conditions surrounding the lumber industry which permit of the removal from the woods of only a very small proportion of the stand, and to the methods of logging, the amount of slash remaining after logging is excessive. Generally also the timber remaining after logging is without further value, and, since the slash effectually prevents the growth of a valuable second crop, slash must be removed first if the land is to be utilized in producing another crop of timber.

I need not point out that by far the greater portion of the land in British Columbia is, owing to its roughness and lack of soil, unsuited for agriculture, and the only possible way in which it can be made a steady source of wealth is by the growing of timber. Besides its effect in preventing the production of a second crop of timber, slash is universally recognized as the most serious of all fire hazards, and that it is only a question of time before every slash area will be set on fire. This being the case, the evident thing to do is to burn the slash at such a time and under such conditions as will, so far as humanly possible to determine, render it certain that the fire does not spread to adjoining timber.

The Forest Act of British Columbia does not make the burning of slash compulsory although in the States of Oregon and Washington, where the conditions are identical, such laws are in effect. The Forest Act does, however, empower the Minister of Lands or the Forest Board to require owners to construct a safe fire-break about any area of slash, and where necessary to protect valuable timber this provision of the Act will be enforced.

To be at all safe or effective against July or August fires, fire-breaks must consist of a strip 5 to 10 feet wide cleared to mineral earth and a strip 10 to 30 feet



Slash on logged over area piled so as to reduce fire danger. All the contractors working on the 2,000 miles of railroad being constructed in B.C. are now required to pile slash.



Showing where slash has been burned on logged over area. No danger of fire now.

wide cleared of brush, inside which all dead snags standing within a distance of 100 feet must be felled.

As long as the slash remains, however, the danger from fire is still serious, and it is felt that it would be far better to burn the slash itself than to construct such fire-breaks, the cost of which is as much or more than that of slash burning.

A number of loggers in British Columbia have already adopted the practice of burning their slash every year either in the spring or in the fall, and I hope that you will decide to apply the plan to your operations and take up the matter immediately with your superintendent. The present spring is backward, and except in high winds slash burning may be safely carried on until the first or second week in June. During April no permit to burn is required, and after May 1st permits can be obtained from the local forest officers. While it is impossible to specify the conditions as to weather when burn-



Logging slash before burning. A most dangerous fire trap



Showing where slash has been burned on logged over area. No danger of fire now.

ing can be done safely, or the methods by which the burning can be most effectively accomplished, these matters being best determined by your superintendent, the following general rules may be of assistance:—

(1) Always construct a trail or a light fire-break around the slashed area before starting fire. This will serve to confine the fire and also permit men to get around the fire quickly.

(2) Be sure and have enough men on hand when you start a fire to control the fire if it threatens to spread beyond the slash.

(3) Never start a fire in the morning unless you feel certain a strong wind will not arise. The best time to start a fire is after 4 o'clock in the afternoon on a calm day; if the weather is warm and the slash dry all the better.

(4) If the slash area is surrounded by timber start fires first on the leeward side if there is a breeze, or on the uphill side

if on a slope. When the danger of fire spreading beyond the area to be burned is past, set fire on the windward side or at the base of the slope; also whenever possible take advantage of a breeze blowing away from green timber.

(5) Burn over the area as quickly as possible. This can be done by starting fires in a large number of places.

(6) Keep a watchman on the area burned until all fires are out. Cut down any snags which may be burning. All fires should be completely out before June 15.

Experience has shown that slash can be burned safely at the cost of 5 to 20 cents an acre, and that this expense is fully repaid by the resulting added safety of the camps, equipment and surrounding timber. The cost can be materially reduced if the policy of annual burning is definitely adopted, since by a little forethought the superintendent and foreman can arrange to have drag and skid roads serve as fire-breaks. When it is known where the boundary of an area to be burned will lay, it is also a material help to have the trees felled away from the green timber.

I would appreciate it very much if you would report what action you take, if any, with respect to burning your slash this spring, giving the area burned, the weather conditions, methods of controlling the fire, and the cost. At the end of the season this information will be collected in the form of a bulletin and mailed to all the lumbermen.

It is also desired that the owners of timber be prepared to discuss the subject thoroughly at the International Fire Protection Convention which will be held in Vancouver next December.

NEW LEASES TAKEN UP.

Premier Flemming of New Brunswick recently stated in connection with the new Forest Legislation that of the 10,000 square miles of Crown timber lands 7,000 have already been applied for under the terms and conditions of the new leases.

As our readers are aware the new laws recently passed provide for two forms of license,—a saw mill license of twenty years renewable for a further period of ten years, and a pulp and paper license of thirty years renewable for two periods of ten years each at the option of the Government.

It is expected that less than five hundred will remain out, and not elect to come in under the provisions of the new law as the law provides in this case the limits will be put up at auction in 1918 as the former leases provide.

Havoc by Forest Fires.

Damages Heavy in All Parts of the Country.

The losses from forest fires this year have already reached great proportions. During the month of June there were serious conflagrations in many parts of the country, the most serious being in the vicinity of New Liskeard. Bush fires harassed the settlers, and lumber mills were saved with great difficulty. One million feet of rough lumber were destroyed on June 16th.

The conditions of drought which prevailed all over the country in the first week in July started the flames on their work of devastation once more. In New Brunswick the month of June was an unusually dry month, as showed by the statistics prepared by the Dominion Meteorological Station at Fredericton. As against an average rainfall for the month of 3.6 inches for the last thirty-nine years, there was this year only 1.86 inches.

The worst fire was at Cedar Brook, Victoria County, where over 5,000 acres of Crown timber lands were burned over, and a lumber camp with \$3,000 worth of supplies. Another bad blaze broke out on the lands of the Inglewood Pulp and Paper Company.

Another large fire is reported this season in the province of New Brunswick. This was set in the McLaughlin limits in the upper St. John River by two unknown prospectors. They had been warned by the fire warden, but neglected the caution. Camps and camp supplies to the extent of \$4,000 and 200 square miles of spruce timber land, half of which had been logged over, were burned.

In Northern Ontario the worst losses so far recorded this year occurred following a series of small blazes throughout the whole Northland, which for the period totalled higher than for any preceding year.

The town of Biscoe, 60 miles west of Chapleau, was completely destroyed on June 13, and its 500 inhabitants rendered homeless. The mills of the Booth and Shannon Lumber Company at Thief River Falls, Minn., on the Soo line of the C.P.R., were burned out, at a loss of \$250,000.

Fires of immense proportions broke out during the latter part of June in the vicinity of Cochrane, Ont., and on the 20th of the month it appeared that the whole country would be swept. Settlers were sending their effects out of the danger zone, and many hundreds of people were almost suffocated by the acrid smoke. A rain which came as a godsend began to fall on the 31st and saved the territory which seemed doomed.

At South Porcupine the wind died down at a critical moment, which gave the fire-fighters an opportunity to do effective work. At Hearst, which is surrounded by bush and which has no water supply, the lack of wind helped in the fight to confine the flames to the bush.

Among the losses reported were a dwelling valued at \$2,000 just outside Cochrane, 500 cords of wood belonging to the Foley-O'Brien mine at South Porcupine, 100,000 logs owned by a saw mill company at Jacksonboro; a lumber mill, 30,000 feet of lumber and eight dwellings at Charlton, \$20,000 worth of property owned by the T. & N. O. Railway at Englehart. This in addition to the loss at Earleton, ten miles south of Englehart, which was practically wiped out.

According to the official reports received by Chairman Englehart of the T. & N. O. Railway, the fires extended intermittently from Sudbury to Kenora, principally in the spruce and pulpwood districts. By an almost inestimable stroke of fortune the government reserve, extending from mileage 42 to mileage 82, and embracing the great pine region, escaped notwithstanding the fire which raged all about it. Outside of the spruce forests the heaviest loss reported was practically confined to the town of Earleton. It was at this point alone that the railway directed its relief operations, and Mr. Englehart reported that everyone was cared for. South and southwest of Cochrane the fire was raging in the marsh and muskeg, and the residents of the town had to steadily fight off the flames.

All down the Ontario Government Railway line from this point to Matheson forests were on fire. The town of Matheson seemed doomed for a time, but it eventually escaped. Swastika and Kirkwood Lake were not touched, though the fire had been bad in the woods nearby.

The long jump down the line to Earleton was reported as practically fire free. Thornloe for a time was seriously threatened, but hard work saved the town. Fires raged around Heaslip, but not in the immediate vicinity of buildings. Of the spruce and the pulp wood wiped out by the fire, it is estimated that one-third belonged to the Government and two-thirds to settlers or land-holders. A large amount of the fire-swept territory belongs to militia veterans who received it in land grants.

Reports from the West show that toward the end of July a bad fire laid waste about twenty-five miles of territory between Tete Jaune Cache and Fitzhugh, Alta.

Lumber, Lath, Shingle and Square Timber Statistics for 1912.

New Bulletin of Forestry Branch, Ottawa Shows Great Decrease in Production.

The most noteworthy fact brought to light by this new bulletin on the lumber production of Canada was the 10.7 per cent. decrease in cut in 1912 as compared with that of 1911. All provinces except Saskatchewan showed a substantial falling off in production and, although only 2,558 firms operating saw mills reported in 1912 as against 2,871 in 1911, yet, as the bulletin points out, it was mostly small mills which failed to report, and the fact that most of the larger mills reported a decrease in their output, indicates that the decrease in production actually took place and was not a result of incomplete returns.

The total value of the lumber, laths, shingles and square timber produced in Canada in 1911 was \$76,540,897, the amount of each being as follows:—

Lumber	..4,389,723,000 ft. b.m.	..\$69,475,784
Shingles	..1,578,343,000 pieces...	3,175,319
Laths	... 899,016,000 pieces...	2,064,622
Sq. timber	65,906 tons....	1,825,154

Ontario still leads the provinces in lumber production, cutting 31.6 per cent. of the total. British Columbia makes a close second, cutting 29.9 per cent. of the total, and as the percentage of production in this latter province is increasing while that of Ontario is falling off, it is likely that the position of these two provinces will be seen to be reversed when the 1913 figures are available.

For the last five years the four principal species in order of importance have been spruce, white pine, Douglas fir, and hemlock, but the production of white pine has remained about stationary during this period and is now on the decrease, whereas the production of the other three species has enormously increased, especially spruce, which now makes up a third of the total cut of lumber, in spite of the fact that it also is the principal wood used in the manufacture of pulp, making up 78.2 per cent. of the total amount of pulpwood. The huge amount of spruce now being cut for pulp-

SOFTWOODS		HARDWOODS	
SPRUCE	1,409,311	BIRCH	100,267
WHITE PINE	911,427	MAPLE	77,827
DOUGLAS FIR	689,861	BASSWOOD	52,921
HEMLOCK	533,238	ELM	32,949
CEDAR	156,022	BEECH	15,417
RED PINE	142,294	ASH	12,386
ALL OTHERS	237,563	POPLAR	7,525
		ALL OTHERS	10,697

Production by species 1912 of lumber, lath, shingles and square timber
with quantities in thousands of feet.

wood may account for the 11.9 per cent. decrease in the amount of spruce lumber cut in 1912.

Coniferous woods made up 92.9 per cent. of the lumber sawn in Canada in 1912, the hardwoods forming 7.1 per cent. of the cut, a somewhat greater percentage of the total than the amount cut in 1911. While it is true that the supplies of more valuable hardwoods of southern Ontario and Quebec are nearing exhaustion, yet the increase in cut of the more widely-spread birch, beech, maple and basswood should be noted because these species are common to the farmer's woodlot. Birch is Canada's most important hardwood.

The average mill prices of lumber in Canada in 1913 rose 41 cts. above that of the previous year, becoming \$15.83 per M. ft. B.M. The local variations in these prices show in some cases a much greater increase as in Ontario where there was an average increase of \$1.52 over the price of 1911 directly due to the decrease of 19.3 per cent. in the production of lumber for 1912.

In the prairie provinces the greatest extremes of increased and decreased production are to be observed. Saskatchewan was the only province in Canada to report an increase in cut, this being 16.7 per cent. greater than the cut of 1911. The average

capacity of the Saskatchewan mills is second only to those of British Columbia, being nearly seven million feet of lumber a year, 99.2 per cent. of lumber cut in these mills being spruce. Manitoba showed a decrease in production of 26.4 per cent., but this decline can be only temporary, for the exhibit of Manitoba woods at the recent Canadian Forestry Association Convention in Winnipeg showed great latent possibilities in this province as a lumber producer.

The production of shingles in Canada in 1912 was 14.1 per cent. less than that of 1911. Spruce, white pine, hemlock and jack pine are being increasingly used for the manufacture of shingles. The production of lath also showed a decrease of 1.9 per cent. from 1911, spruce making up over one-third this product.

One of the most remarkable facts brought out by the bulletin is the extraordinary increase of 89.9 per cent. in the production of square timber in 1912 over that of 1911, this being the first increase since 1877. This increase was largely due to the largely increased amounts of white pine and birch exported in this form, white pine making up 5.3 per cent. and birch 28.5 per cent. of the amount exported. 97.5 per cent. of the square timber cut was exported to the United Kingdom.—G.E.B.

International Bureau of Forestry.

Permanent Commission Decided Upon by the Forestry Congress at Paris.

Probably the most important result of the International Forestry Congress held in Paris last June was the creation of an International Forestry Commission, having for its object the furthering of forestry principles and the convoking, when necessary, of International Forestry Congresses at which legislative and administrative questions pertaining to the forest shall be brought up for discussion.

The temporary officials, consisting of a President, Vice-President, Secretary-Treasurer and Executive Committee, were chosen largely from the French foresters and legislators who were present at the Convention, while forty-two of the representatives of foreign countries, who were present at the Convention, made up the body of the Commission. The Touring Club of France, one of the most influential bodies of private citizens in Europe, offers their hotel in Paris as a temporary headquarters for the Commission.

It is likely that this Commission will take over the publication of International Forestry statistics now being occasionally is-

sued in the bulletins of the International Institute of Agriculture, which was established at Rome in 1910. This latter institute, publishing monthly statistics of the world's agricultural crops, has more than justified its existence, and the International Forestry Commission will prove justifiable for similar reasons. Moreover, it will make possible the spreading and co-ordinating of scientific forestry knowledge which is at present largely restricted to and put to most practical application in Europe.

The Commission will also facilitate the assembling of forestry congresses, international in their scope, at which questions of present concern to all foresters, may be discussed, such as the right of the Government to expropriate misused private lands when their reforestation is necessary for the protection of the watersheds of navigable streams. Such a congress might profitably be held in Canada and would be justified by the impetus they would give to forestry in Canada and by the great importance of the forest resources of this country.

THE CONVENTION IN WINNIPEG.

(Continued from page 116.)

Bureau for Civic Luncheon at Assiniboine Park, returning to Union Depot at 2 o'clock.

2.00—Special C.N.R. Train leaves Union Depot for New Agricultural College, returning will arrive at Union Depot at 5.15 p.m.

Wednesday morning's proceedings went briskly forward until eleven o'clock, when they were pleasantly interrupted by the arrival of special cars chartered by the city which conveyed all the delegates to Assiniboine Park where a magnificent luncheon was served. In the unavoidable absence of the Mayor the chair was occupied by Alderman Wallace, chairman of the Reception Committee. Short addresses were given by civic officials and replied to by representatives of the Association.

Immediately after luncheon the party betook themselves to the cars again and were conveyed to the Union Station. As guests of the Government of Manitoba they were then taken by special train to view the new Agriculture College now being constructed at St. Vital, one of the suburbs of Winnipeg. Manitoba's first Agricultural College, planned on what was thought to be a generous scale was opened seven years ago. It has been completely outgrown and as a result the Government is erecting this new institution which will cost when complete \$3,000,000. It will be opened in September. The visitors, who were personally shown over the buildings by Hon. George Lawrence, Principal W. J. Black and Mr. F. W. Brodriek, Professor of Forestry, were astonished and delighted with the provision that has been made for agricultural education in Manitoba. It had been expected that the program would be completed at the Wednesday morning session, but the desire to discuss different features was so strong that the concluding session had to be postponed to Wednesday evening. The Resolutions Committee was appointed at the first session as follows: Messrs. R. H. Campbell, (convener,) Archibald Mitchell, W. P. Dutton, H. R. MacMillan, A. P. Stevenson, F. W. Brodriek and A. L. Mattes. This committee reported on Wednesday and after considerable discussion the following resolutions were passed:—

Resolutions.

(1) Resolved, that the Executive Committee take into their consideration the advisability of appointing: (a) A central committee at Ottawa and sub-committees at important points in different sections

of Canada to formulate a national forestry policy; and (b) Advisory boards at each centre where a sub-committee is formed.

(2) Resolved, that this Convention approves the action of the Dominion Government in extending the areas included in Forest Reserves on watersheds and non-agricultural lands, and would urge on the Governments of the Dominion and the provinces the necessity for continuing the extension of such reservation until all lands of that character are included.

(3) Resolved, that before any lands bearing timber or lands contiguous to timbered areas are opened for settlement an examination of such lands should be made to determine whether they are best suited to the growth of timber or whether their opening would endanger the timber.

(4) Resolved, that this Convention would urge upon the Dominion Government the necessity for the afforestation of the sand lands throughout the prairies and the setting apart of such lands for this purpose.

(5) Resolved, that the Fire Ranging Service should be extended and made more efficient and that the rangers should be selected on the basis of their special qualifications for the work and should hold office so long as they render efficient service.

(6) Resolved, that the Canadian Forestry Association express its approval of the energetic policy which is being followed by the Dominion Commission of Conservation in investigating the important forest problems of Canada.

(7) Resolved, that the Canadian Forestry Association express its appreciation of the effective manner in which the Dominion Board of Railway Commissioners and the officers of the leading Canadian railway companies have worked together for the prevention and control of forest fires arising from operating railroad lines.

(8) Resolved, that this Convention again records its approval of the work of the Tree Planting Division of the Dominion Forestry Branch, not only in the free distribution of trees to settlers and the supervision of their growth, but also in thereby providing practical demonstrations to settlers in all parts of the country of the possibility of forest growth on the prairies.

(9) Resolved, that this Convention recommend that experiments be carried out by the Dominion and provincial governments affected to obtain data regarding the best disposal of debris resulting from lumbering operations.

(10) Resolved, that in view of the great importance to Western Canada of the wise administration and use of the

forest resources of British Columbia the Canadian Forestry Association express its strong support of the policy which has been announced by the British Columbia Government that there shall be established in connection with the University of British Columbia a Forest School designed to train young men of Western Canada for work in the Government forest services and in the different branches of the timber business.

(11) Resolved, that the Convention heartily approves of the establishment of ranger schools for the training of forest rangers for the government forest service and would urge that this question be given early consideration by the federal and provincial governments.

(12) Resolved, that in view of the immense importance of impressing the younger generations with the importance of tree growth on the prairies, this Association commends the action of the Departments of Education and Agriculture in the three prairie provinces in providing instruction in tree planting, horticulture and agriculture for the school children, first through their teachers, by means of special classes, institutes, and summer schools, and secondly direct to the scholars through special instruction provided by these departments; and, further, that, while expressing its approval of the work already done, this Association would point out the importance of such means of disseminating information, and commend it still further to their consideration.

(13) Resolved, that this Association recognizes the importance of planting shelter belts and other trees and shrubs in the school grounds of the prairie provinces, and that, to encourage this work in a practical manner, it recommends to the attention of the Departments of Education and Agriculture of the provinces, and through them of the Governments, the making of special grants for such improvements of a sufficiently substantial nature to encourage school trustees to undertake such work, and the making of such regulations as will require that school grounds shall be an area of not less than two acres, and this convention would favor an area of five acres or more, surrounding or in the vicinity of the school.

(14) Resolved, that in view of the fact that many of our prairie cities, towns, and villages are now considering the planting of parks for the rest and recreation of their citizens, this Association commends to their consideration, and also to their citizens individually who are thinking of undertaking such planting, the example of landscape work afforded by the lawn and shrubberies at

the headquarters of the Tree Planting Division at Indian Head.

(15) Resolved, that the thanks of this Convention be and are hereby tendered to His Honor the Lieutenant Governor for his kindness in opening the Convention, and to the Government of the Province of Manitoba and to the Mayor and Corporation of the City of Winnipeg for their kindness in entertaining the delegates; also to the President and Directors of the Industrial Bureau for the facilities granted in the use of their commodious hall and committee rooms, and for the assistance given by the Commissioner, Mr. Chas. F. Roland in planning the arrangements for the Convention.

(16) Resolved, that the thanks of this Convention are due and are hereby tendered to the Press of Canada, and particularly of the City of Winnipeg for the publicity given the Convention and the excellent report of its proceedings.

(17) Resolved, that the thanks of the Convention be tendered the Railways of Canada, and to the Eastern, Western and Transcontinental Passenger Association for their kindness in granting Convention rates for this meeting.

LOSS TO CONSERVATION CIRCLES.

Mr. M. J. Patton, Assistant Secretary and Editor of the Commission of Conservation since the organization of the Commission in January, 1910, has been appointed Treasurer of the Publishers Association of Canada, Limited, Toronto, and will assume his new duties early in September.

Mr. Patton is an honor graduate of Queen's University and gold medalist in political science. Besides filling the duties of Assistant Secretary he has had charge of the publicity work of the Commission. During his term of office with the Commission he was charged with the direction of several investigations of the natural resources, and his reports on the oyster fishing in the Maritime Provinces were partially responsible for an agreement as to jurisdiction being reached by the Dominion and the Provinces, with the result that oyster farming is now being extensively engaged in.

The Publishers Association of Canada is chiefly engaged in publishing works on resources and history of Canada, and Mr. Patton's knowledge acquired while with the Commission will be of value to him in his new position. Conservation work loses a careful investigator and able exponent in the departure of Mr. Patton for his new work, and his many friends, while they will regret this loss to the public service, wish Mr. Patton every success in his new field.

BILTMORE'S PROGRAM.

The Biltmore Forest School has made arrangements to have a camp in the forests of British Columbia a year hence.

One of the interesting features of the notice to prospective students embodying the above announcement is the evident emphasis laid on the development of the young forester along lines of logging and milling.

Students admitted to the Biltmore Forest School in the coming fall or in the winter 1913-14 will be placed in the woods, to work a prenticeship in logging and milling, under the auspices of a graduate of the Biltmore Forest School. They will be required to work for common wages and will be dismissed mercilessly unless they perform the work expected from them with the utmost diligence and energy. Every week, a written report is

submitted by the prentice to the director of the Biltmore Forest School, together with a certificate signed by the foreman testifying to the prentice's efficiency. Such prentices as have stood the test successfully will be assembled by the director in March, 1914, and will be taken to the school's western camp in Oregon, there to join the junior and senior students of the school who have spent the winter in the western lumbering operations. The spring, summer and fall of 1914 will be spent by the entire school in British Columbia, Washington, Oregon and California. By October 1st, 1914, the students will be allotted to various western lumber-camps, there to spend the winter 1914-15 under the auspices of the Alumni of the Biltmore Forest School. The students join the teachers in March, 1915, in the Adirondacks, to spend the spring, summer and fall in the eastern camps of the Biltmore Forest School, receiving, on October 1st, 1915, the degree of Bachelor of Forestry provided that they have stood the tests prescribed.

The students attending the Biltmore Forest School at the present time will not be allowed to participate in the tour through the German wods. The participation (restricted to fifty members) is invited of all graduates of the Biltmore Forest School, all graduates of other American Forest Schools, all national, state and municipal forest officers, all lumbermen and all owners of timberland.

There will be visited the state, communal and private forests situated in Prussia, Bavaria, Hessen and Baden, including such famous forests as the Black Forest, the Spessarts, the forest of Frankfort, of Heidelberg, of Baden, etc

The tour will occupy, from New York City and back to New York City, eight consecutive weeks, from January to March 1914. Total expense, from New York City and back to New York City, \$350 everything included.

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Write for catalog of Biltmore Forest School, addressing—

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Candidates for advanced standing may take examinations in any subject but are required in addition to present evidence of a specified amount of work done in the field or laboratory. The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

For further information address

JAMES W. TOUNEY, Director
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CONTENTS:

Page.

Editorial	129
The Peace River Valley.....	131
Dry Weather Causes Fires.....	133
Commission of Conservation Active..	134
Death of Hon. John Sharples.....	135
Exhibit of Native Woods (picture)..	136
Dominion Forestry Branch Doings...	137
Quebec Forestry Notes.....	138
With the Forest Engineers.....	139
Work in the Rocky Mountain Reserve	142
Douglas Malloch's New Book.....	142

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Montreal.

THE WINNIPEG CONVENTION.

SEP 27 1913

The Winnipeg Convention has passed. It is both encouraging and steady; encouraging in point of attendance, in interest (in a prairie centre not previously known to be interested in forestry) and in the tone of the papers and discussion; and steady, humbling if you will, in drawing attention to the smallness of the work yet done in the vast field that ought to be covered.

The Winnipeg Convention was the first attempt to carry the war of forestry propaganda into central Canada. This is not overlooking the successful meeting at Regina in 1909 but that was rather a gathering of workers than an attempt to awaken the general public to the need of conservation. This, then was the first organized campaign, and on the whole the results were encouraging. The numbers were not as large as those at Quebec or Ottawa or Victoria but then, up to the present, Winnipeg has been looked upon as anything rather than a timber or forestry center. It was not easy to fix a date for the meeting and the one selected had as its chief disadvantage the fact that it came in the same week as the Winnipeg Exhibition. Some people were kept away by the fear that the hotels would be overcrowded but the chief difficulty to be apprehended was that of the newspapers being so crowded with Exhibition reports that forestry matters would get scant space. As it turned out, however, the Winnipeg daily newspapers, weeklies and trade journals took up forest conservation with energy, and during and preceding the convention scores of columns of well-informed and appreciative

articles were published. It is, perhaps, not too much to say that through the publicity secured by and through the convention the people of the Central West have begun to be aroused to the fact that the forests of the prairie provinces are of great importance to every person in the community.

The aspect of the importance of western forests to the western community was brought out in the addresses of His Honor the Lieut. Governor and the other speakers at the opening session; while the importance to the individual was brought home by the address among others of the President and the papers of the Mr. R. H. Campbell, and Mr. W. T. Cox. The title of Mr. Campbell's paper 'Manitoba: a Forest Province,' was one which at once arrested attention. The exhibit of native woods of Manitoba had apprised people of the fact that timber trees do grow in Manitoba, and Mr. Campbell's paper supplied the information as to districts, species and quantities. Mr. Cox boldly challenged old figures and stated that the rate of growth was more rapid than formerly estimated.

The President pointed out as a most encouraging sign that, whereas some years ago the railways had looked askance at the work of the Association, views had so changed that men like Sir William Whyte, Mr. George Bury and Mr. J. S. Dennis attended, took part in the meetings and told what the railways were doing in forest protection.

The success of tree-planting on the prairies was a most encouraging feature. Nearly twenty-five million trees have been planted by prairie farmers. This number of trees would not, it is true, make much of a showing in the forests of the timber provinces but on the prairie these trees mean added comfort and happiness. At present

they add chiefly to the content, rather than to the extent of prairie life. This makes for permanence of occupation and of aim, a thing much needed on the prairies. In the future it doubtless will mean a very considerable addition to the local supply of fuel, fencing and building material. Only a beginning has yet been made and tree planting is bound to go on at a greatly accelerated pace.

Fire protection continues to be the burden of most of the addresses at conventions. This is both satisfactory and unsatisfactory. It is satisfactory to know that so many people are thinking about this subject and that in some cases new methods are being experimented with, but it is unsatisfactory in that we are always talking about it and making such slow progress.

It was in this connection that the address of Mr. Vere C. Brown was applicable. He virtually held that the Association had reached that dangerous time of which the Scriptures give warning when all men speak well of us. He pointed out that at convention after convention there was unanimous agreement that such and such things were necessary; the public and the press have concurred in this, and yet nothing was done.

These conventions in the aggregate cost a lot of time and money. Their object is to arouse the public mind in order to get something done. Not a little has been done in the past but the time seems to have arrived for a review of methods in order that results accomplished shall be more nearly commensurate with the effort put forth. This is the steadying result of the convention and it is to the solution of this problem that all officers and members of the Canadian Forestry Association should devote themselves during the coming winter.

Conditions in the Peace River District.

Interesting Letter from a Vice-President of the Association.

For a good many years Mr. Francis D. Wilson has been the territorial Vice-President of the Canadian Forestry Association for the territory of Mackenzie. Mr. Wilson was the representative of the Hudson's Bay Co., at Fort Vermilion. In replying to the letter of the Secretary notifying him of his re-election and inquiring about forestry work in the district, Mr. Wilson writes tendering his resignation owing to the fact that he is being moved by the company to Moose Factory, James Bay District. This does not mean that Mr. Wilson has lost interest in forestry, and he promises to write for the Association an account of forest conditions near his new post. Accompanying his letter Mr. Wilson sent some notes of conditions in the Lower Peace River Valley, which are published below. It should be noted that postal facilities in that part of the Dominion are very poor. Mr. Wilson's letter is dated May 20, so that it was dispatched before the Dominion Forestry Branch began any work in that district this season. It should also be noted that Mr. Wilson's reason for thinking it will not be necessary to lay out forest reserves in that district, is that the land now covered by forests is wholly unfit for agriculture. However, with the advent of the inexperienced settler, and still more of the 'fake' settler, it will probably be just as well to have these marked out as forest reserves as early as possible.—Ed.

There is very little settlement going on in the lower part of the Peace River, the settlers at Fort Vermilion

are, with two or three exceptions, retired servants of the Hudson's Bay Co., or their descendants. Peace River Crossing, Grande Prairie and the upper Peace River are attracting all the incoming settlers at present, and any settlement going on here at present is not adversely affecting the forests. We have had a period of four or five very dry years, and last summer and the summer before there were a number of forest fires that destroyed a quantity of spruce timber. It is difficult to suggest an adequate system of fire protection, the distances are so great and the country wholly unsettled between Peace River Crossing and Chipewyan (a distance of 557 miles) with the exception of the Fort Vermilion settlement which is situated about halfway between these two points.

There is a Sergeant of the R. N. W. M. Police stationed here. If he had one or two Constables with him they could render effective service for at least six months of the year, which are the danger months, by a system of patrol on the Peace River. They could meet a patrol from Peace River Crossing the first part of the month and return to Vermilion and go down



Skidway of Logs on Peace River.



Hudson's Bay Company's Logging Camp on the Peace River.

the river and meet a patrol from Chipewyan, by this system the whole of the Peace River could be covered by a patrol twice a month, and if an arrangement could be made with the Forestry Branch for extra pay, this patrol could be made to serve the double purpose of police and fire patrol. I am sure that if an arrangement as outlined could be made with the Commissioner of the R. N. W. M. Police we would have a much more effective service at less expense than the appointment of three or four forest rangers.

In granting permits to saw-mill owners for cutting timber on the Peace River, I do not think it wise to prohibit cutting on the Islands, as the majority of the Islands on the Peace River have a quantity of over-ripe timber about 10% of which is already affected by stump rot which in some cases extends up the tree five or six feet. Permits could be granted to responsible parties with the stipulation that no timber should be cut under a certain size, making the limit an inch or two larger than timber cut on the main land. None of those parties sent out by the Dominion Forestry Branch to examine the country in the vicinity of Lesser Slave Lake

have, as far as I can learn, been on the Peace River.

The land covered by any of the timber areas in this part of the country is wholly unfit for cultivation and I do not think it will be necessary to have any of it reserved for timber production.

New Museum.

The New York State College of Forestry at Syracuse is developing what promises to be the most complete Forest Museum in this country. Besides a solid Redwood plank, with dimensions of 7 x 11 feet and the section of a giant Ironwood over two feet in diameter, it is securing trunks of trees from the Adirondacks and Catskills, which will represent all of the native forest species of New York. It has just received unusually large trunks of the Mountain Ash and Shadbush or Juneberry from the Catskill Forest Experiment Station near Tannersville. These two trees are really forest weeds and seldom reach a large size, but they are of interest because they are weeds of the forest and because they have an ornamental value not ordinarily appreciated. The College is anxious to make its Forest Museum the most complete of its kind in the country and is anxious to learn of large or peculiar trees throughout the State. * * *

One quail killed in Kansas last fall had in its stomach the remains of twelve hundred chinch bugs. This shows one of the useful points of the quail. And keeping forests on lands that are not fit for agriculture will protect the quail, which in turn will protect the farmer.

Dry Weather Causes Fires.

Severe Outbreaks in all Parts of the Country.

The extended drought which was felt throughout the length and breadth of the country this year was particularly severe in the eastern part of Canada, and worst of all in Ontario. The Meteorological Bureau at Toronto has kindly supplied figures for the precipitation in the last few months.

Thirteen of the fourteen meteorological stations throughout Canada report a great decrease in precipitation in May, June, July and August, 1913, as compared with the amount recorded in the same months in 1912. By stations the figures are as follows:—

Station	Decrease		
	1912 Inches	1913 Inches	1913 1912
Vancouver, B.C.	12.03	10.90	1.13
Calgary, Alta.	13.68	11.49	2.19
Prince Albert, Sask.	12.62	8.42	4.20
Winnipeg, Man.	12.25	10.60	1.65
Port Arthur, Ont. ...	9.29	14.97	5.68*
Parry Sound, Ont. ...	11.78	9.34	2.44
Cochrane, Ont.	11.16	7.35	3.81
Stonecliffe, Nipissing Dist., Ont.	12.10	8.67	3.43
Toronto, Ont.	13.59	7.33	6.26
Ottawa, Ont.	15.90	9.24	6.66
Montreal, Que.	13.85	10.33	3.52
Quebec, Que.	21.53	14.14	7.39
St. John, N.B.	19.89	10.51	9.38
Halifax, N. S.	17.30	12.52	4.78

*Increase.

This is the worst drought in many years, not since 1885 has there been felt such tremendous need for moisture. Wells in all parts of the country were wholly dried up, springs ceased to flow, and practically everywhere the crops were retarded and the pasture of stock gravely injured. During the latter part of the month of June, all July and the great part of August, there was practically no rain to support the herds which supplied milk to the great urban centres.

Needless to say, this condition of dryness made the woods like tinder, and everywhere upon very slight cause fires sprang out which spread rapidly through the undergrowth and consumed vast quantities of young trees, mature timber and houses, lumber yards and mills. The worst fires of the month in Nova Scotia took place about the 21st of August. Fires fairly honeycombed the district round about Bedford and Sambro, Purcell's Cove and Bear Cove. Cinders rained down everywhere

and vast areas of timberland were destroyed, houses were abandoned by the score, and a company of militia was called out near Halifax to aid the settlers in their efforts against the fire demon. Between Hammond's Plains and Upper Sackville the forests of excellent timber were completely destroyed, at a loss to the limit holders of at least \$50,000. In Halifax County where there had been not the slightest drop of moisture, the fire was under way for two weeks, and communication was cut off between Lunenburg and Halifax through the burning down of the telephone and telegraph lines. Many small settlements were completely surrounded by fire, and there was no chance to secure any intercourse between them and the more thickly populated centres. Beachville, Clearland and East Dover were all gravely threatened at one time, but luckily escaped any serious loss. Chief Fire Ranger Penny, of the Government service estimated that 3,000 acres of land were burnt over at a loss of from \$70,000 to \$100,000.

In central Ontario hardly a district was without some loss through bush fires. Worst of all were those which swept through the central part of the country between Sudbury and Kingston. In Haliburton County the flames held sway well over a week. In Apsley Township the settlers were in a desperate way and were removing their effects and fleeing before the flames. Peterborough, Lindsay, Fenelon Falls and Bobcaygeon were all centres of great havoc. In Minden the Digby fire had not only reached the settlement at Moore's Falls, but was burning along the west side of the road near the summer cottages at Moore's Lake, creeping on its way to Norland. Another branch of this same fire, which was one of the most destructive in all the series of conflagrations, came out toward the neighborhood north of Deep Bay and Gull Lake. To head this off a settler set a back fire, but the result was more disastrous than the original flames would have been, as it got away and burned over a great area. Another fire running through the district near Longford not only destroyed great areas of forest land, but got into the farmers' hay and destroyed vast quantities. In Snowdon Township the fire swept the entire lumbering district from Lochlin and Gelert to Irondale and Gooderham. It burned its way to Furnace Falls, destroy-

ing in addition to the young forest growth and the young standing timber, 200 cords of fire wood. In many cases the settlers protected their farm houses by ploughing fire guards around them. At Hastings Village the danger was so great that three hundred men were called out to fight the flames, and finally succeeded in controlling them. Just outside of Peterboro a blaze which required the efforts of fifty men to put it out, ran unchecked for two or three days. At Gravenhurst the flames made terrible inroads upon the forest and the property of citizens, and it was not until the fire brigade and the citizens of the town had worked for forty-eight hours that the danger was really overcome. The town of Orillia was enveloped with smoke for many days on account of numerous blazes round about. At Parry Sound the settlers, lumbermen and railway men were fighting the flames day and night. The villages of Ardbeg and Boakview were saved only after prodigious efforts on the part of the fire fighters. Superintendent Bartlett of Algonquin Park reported a fire of very serious proportions raging in Livingstone township. Details of the destruction are not to hand however.

The Ottawa Valley was visited by a great number of fires of sizes of greater or less magnitude, some of which did great destruction. The Mer Bleue at Carlsbad Springs was the centre of raging forest fires. At Constance Creek, Aylwin, Kazubazua, Wilson's Corners, and many other points, there were blazes which seriously damaged property and wholly destroyed the young growth in the wooded area.

Relief from the terrible drought did not come until the 20th of August when rain fell to the extent of from 1 to 3 inches over practically the whole East. In Northern Ontario particularly its blessings were felt. Many localities were blessed with heavy thunderstorms, and the period of cold weather immediately following added to the effectiveness of the rain through preventing rapid evaporation of the moisture which had entered the soil. It is impossible to estimate the benefits from this single period of precipitation, but undoubtedly had the rain not come, or had the wind risen, the losses would have been appalling.

The prairie district suffered more or less, although Chief Forester Leavitt, of the Commission of Conservation, who made an extended trip West in the month of July, reported that the losses were not as great as in many other years. A greater degree of moisture was felt in the mountainous provinces of Alberta and British Columbia, and no great amount of destruction was wrought. However in Vancouver Island great anxiety was felt on the part of the lumbermen holding timber limits because the dry weather had been respon-

sible for several bad outbreaks, and the forest wardens were forced to work night and day with all the help they could procure.

Until some regular system of compiling the losses from forest fires throughout the Dominion can be instituted, it will be impossible to state the actual loss which has taken place during the danger season. It is fair to estimate that this season's havoc amounts to fully half a million dollars. Further reports from the Province of Quebec and British Columbia will serve to indicate to what extent the forest wealth was depleted.

COMMISSION OF CONSERVATION ACTIVE.

The Commission of Conservation and the Department of Lands of British Columbia have entered into a co-operative arrangement for a study of the forest conditions and forest resources of British Columbia. Dr. H. N. Whitford has been employed by the Commission of Conservation to begin the work of collecting information along the above lines from all available sources. Dr. Whitford was for years a member of the Forest Service of the Philippine Islands and has published a bulletin on their forest resources.

The large amount of material which has been collected by the British Columbia Forestry Branch will be supplemented by information to be secured from all other possible sources including the Forestry Branch of the C.P.R. and statements by timber cruisers, limit holders, surveyors and others. The C.P.R. Forestry Branch has collected a great deal of valuable information with regard to forest conditions and forest resources of the southern part of British Columbia, and much of this information is to be made available through a co-operative arrangement between the Commission of Conservation and the authorities of the C.P.R.

This work is part of a general study which has been undertaken by the Commission of Conservation, having for its object the approximate determination of the amount of timber in each of the various provinces of Canada.

In the Prince Albert District of Northern Saskatchewan, a similar study of forest conditions and forest resources is being carried on for the Commission of Conservation by Mr. J. C. Blumer. This part of the work is being conducted in co-operation with the Dominion Forestry Branch.

Mr. Blumer first took up forestry work as a student in 1901, and studied forestry at the University of Michigan in 1905-6. For the past three years he has been a resident of Saskatoon, Sask.

DEATH OF HON. JOHN SHARPLES.

The death of Hon. John Sharples, member of the firm of W. & J. Sharples, timber merchants of Quebec, occurred at the family residence in that city on July 30. Mr. Sharples was a native of Quebec, having been born there in 1847. He was educated at Quebec and Montreal and became within a few years of going into business with his brother one of the leading lumbermen of the province. Mr. Sharples was prominent in public affairs. He was a member of the Legislative Council of Quebec, honorary president of the Union Bank of Canada, and, during recent years, had occupied the post of member of the Quebec Harbor Commission, director of the Quebec Bridge Company, director of the Quebec Railway, Light, and Power Company, director of the Prudential Trust Company, director of the Quebec Steamship Company and vice-president of the Quebec Northern Railway Company.

In religious and social matters he was also very active. He was vice-president of the Anti-Alcoholic League, past president of the Canadian Club and a few years ago he established a special children's ward in the Hotel Dieu hospital of Quebec. In 1907 in view of his distinguished services and in recognition of his Christian character he was created a Knight of St. Gregory by his Holiness the Pope.

The funeral services were held at St. Patrick's Church, Quebec, on Aug. 1 and were attended by leading citizens of the province. One of the chief mourners was Mr. Wm. Power, M.P., vice-president of the Canadian Forestry Association, whose partner the late Mr. Sharples was. The Secretary attended on behalf of the Association.

TIMBER PRICES SOAR.

Some idea of the recent advance in the price of lumber may be gathered from the fact that E. A. Dunlop, M.L.A., of Pembroke, has just paid the record smashing price of \$14.40 per thousand feet for the timber on a limit measuring 15 1-2 square miles in the township of Gooderham, District of Nipissing.

The limit, which was bought from the Ontario government by Mr. Dunlop for the Pembroke Lumber Company, contains all white pine. Tenders for the purchase were called for, and Mr. Dunlop's was the highest.

For the past few years the average price paid per thousand feet for timber cut off similar limits has been between \$10 and \$11. About a year ago, however, J. J. McFadden, of Renfrew, paid \$13.50 for a limit near the Jock river.—Citizen.

C.P.R. PUBLICITY.

One of the best publicity features in the interests of forest conservation which has appeared yet is the following notice which appears in the Western Lines Time Table of the Canadian Pacific Railway. The folder is issued by the hundreds of thousands and the notice is displayed in such a fashion as to attract widest attention.

SAVE THE FORESTS

Canada's timber preservations are assets the value of which can only be conjectured. To wilfully neglect to take ordinary precaution to insure them against destruction from forest fires is to commit a crime against the safety and prosperity of our citizens.

**CAREFULLY EXTINGUISH
SMALL FIRES**

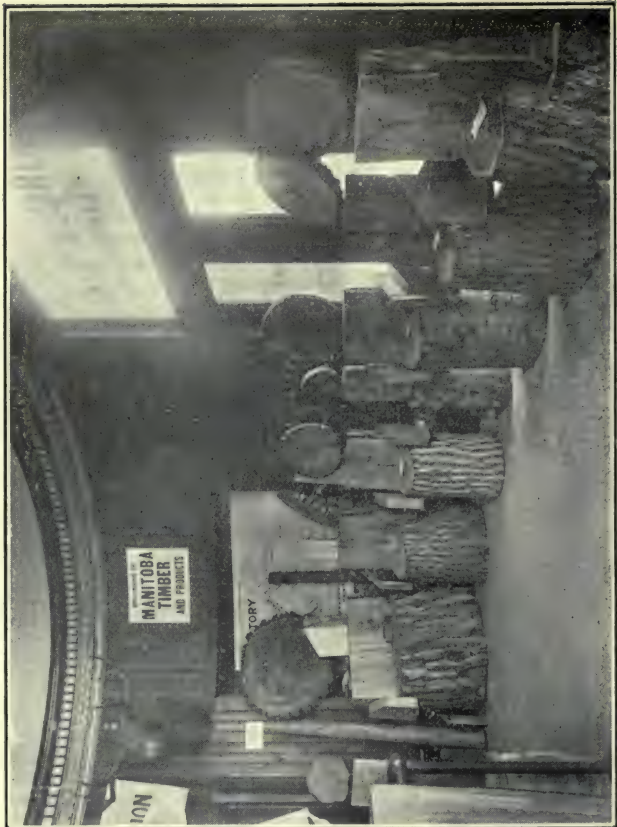
Those who go into the woods—hunters, fishermen, campers and canoeists—should consider it their duty to exercise every care to prevent loss from fire. Passengers on trains should not throw lighted cigar or cigarette ends out of the car windows. Besides the danger to lives, homes and property to settlers, every acre of forest burned means labor turned away, reduced market for our crops, heavier taxation on other property, streamflow disturbed and higher lumber prices.

FIRE AT BOOTH'S MILL.

During the first week of September the mills of Mr. John R. Booth at the Chaudiere Falls, Ottawa, suffered damage by fire to the extent of over \$110,000. The first fire occurred on Sept. 1 in the carrier which conveys the sawdust and refuse to the burner, resulting in a loss of over \$10,000. This caused the closing down of the mills for a week, and on Sunday, Sept. 7, when the equipment was repaired sufficiently to permit of resuming operations, a second fire destroyed the part of the plant known as the timber mill, with a loss of approximately \$100,000. This was a wooden structure situated between the sawmill and the Chaudiere Falls. By dint of hard work on the part of the city firemen and the mill fire brigade the fire was kept from reaching the sawmill, a stone structure, and the other parts of the plant, as the pulp and paper mills, etc. The timber mill was a total loss. About three hundred hands were employed in this part of the plant. Decision has not yet been made as to rebuilding, but any structure erected to replace this one, will, it is stated, be like the more recent parts of the plant, of steel and concrete.

THE EXHIBIT OF MANITOBA WOODS AT THE WINNIPEG CONVENTION.

The Exhibit was arranged in the large rotunda of the Industrial Bureau. The illustrations below show the two halves of the circle. Six or seven hundred people saw the exhibit daily.



- Black Willow (*Salix nigra* Marsh).
Diam. 20 in.
- White or American Elm (*Ulmus americana*, L.). Diam. 20 in.
- Canada Balsam (*Abies balsamea*, Mill). Diam. 24 in.
- Black Spruce (*Picea mariana*, B., S. & P.). Diam. 12 in.
- Aspen (*Populus tremuloides*, Michx). Diam. 27 in.
- Balm (*Populus balsamifera*, L.).
Diam. 30 in.
- Cottonwood (*Populus deltoidea*, Marsh). Diam. 42 in.
- White Cedar or Arbor Vitae (*Thuja occidentalis*, L.). Diam. 15 in.
- Basswood (*Tilia americana*, L.).
Diam. 22 in.
- Black Ash (*Fraxinus nigra*, Marsh).
Diam. 18 in.
- Burr Oak (*Quercus macrocarpa*, Michx). Diam. 33 in.
- White Spruce (*Picea canadensis*, B., S. & P.). Diam. 40 in.
- Tamarack (*Larix laricina*, Michx).
Diam. 19 in.
- White Birch (*Betula papyrifera*, Marsh). Diam. 19 in.
- Jackpine (*Pinus divaricata*, Du Mont de Courc). Diam. 22 in.
- Red or Norway Pine (*Pinus resinosa*, Ait.). Diam. 23 in.
- Manitoba Maple (*Acer negundo*, L.). Diam. 18 in.

DOMINION FORESTRY BRANCH DOINGS FOR JULY.

Mr. R. H. Campbell, the Director of Forestry, is continuing his tour of inspection in the West, being at present in British Columbia, but expects to be home in the early part of September. During his absence Mr. T. W. Dwight occupies the position of Acting Director.

Mr. Lewis has returned from his trip to the Maritime Provinces, where he was gathering statistics for his bulletin on the Wood Producing Industries of these provinces.

Forest Nursery Stations:

Mr. Norman M. Ross reports satisfactory progress, with increasing interest manifested by settlers, 1595 letters being received in July. Eight inspectors of tree-planting are now at work under the general supervision of S. S. Sadler.

The Branch nursery at Sutherland is being brought rapidly into shape by Mr. Walter B. Guiton.

Forest Administration.

Mr. F. K. Herchmer, the District Inspector in Manitoba, reports having made a general survey of the Reserves along with Mr. R. H. Campbell, everything being found satisfactory. A steel lookout tower was recently erected by Supervisor Stevenson on the Riding Mountain Reserve. Mr. Tunstell is making a survey of the region around Clear Lake, which will be opened up as a summer resort.

On the Duck Mountain Reserve, Mr. Wellman reports seven miles of fire line and eleven miles of wagon road constructed. Mr. Newman is engaged in laying out lots for a summer resort at Madge Lake.

In Saskatchewan, Mr. G. A. Gutches, the District Inspector, after attending the Forestry Convention at Winnipeg and the Rangers' convention at Roblin, made a tour of the Reserves, where very satisfactory work is being done, many miles of trails and fire-lines being cut. Permittees are reported to be piling brush satisfactorily.

There has been a considerable change in Alberta, due to Mr. Millar's desire to have his men acquainted with the varied conditions existing in the different divisions of the Rocky Mountain Forest Reserve. Mr. Alexander has been transferred from the Brazeau Forest to the Crowsnest Reserve, exchanging localities with Mr. Clark, who is now Acting Supervisor of the Athabaska Forest Reserve. Mr. Edgar has resigned the supervisorship of the Bow River Forest and Mr. Greenwood been appointed Deputy Forest Super-

visor, Mr. Millar taking control temporarily.

On the British Columbia Reserves, Supervisor Scandrett reports the construction of trails, bridges and ranger-stations.

Fire Ranging:

Mr. Finlayson, the Chief Inspector of Fire Ranging reports arrival at Fort McMurray, after an adventurous canoe trip down the Athabaska River. Few of the July reports of the Chief Fire Rangers are in, but owing to the abundant rain, there has been little danger or damage from fire in Western timber areas.

Mr. D. Roy Cameron, District Inspector of British Columbia, has arranged for a system of check inspections of fire-protective apparatus on locomotives, which should eliminate the possibility of further negligence. The Trans-continental Railways have so far, kept their rights-of-way in fairly satisfactory condition.

Forest Surveys:

Mr. Donald Greig, in charge of the Lake Manitoba Survey, reports good merchantable stands of aspen and jack pine in the eastern part of the surveyed region.

Mr. A. B. Connell has completed the reconnaissance of the northern slope of the Pasquia Hills, and will continue work on the Carrot River.

Mr. C. H. Morse reports that in the upper valleys of the Maligne and Athabasca Rivers 'practically no merchantable timber exists.'

Mr. E. H. Roberts has completed the survey of the Birch Lake region near Prince Albert and will continue the work around Green Lake.

Mr. Lionel Stevenson, the soil expert, has made an examination of the soils of some of the areas reserved from settlement in Saskatchewan and has found them in general suited only for forest crops.

Other survey reports have not yet been received.—G.E.B.

NEW PEST IN QUEBEC.

'Le Naturaliste Canadien' for the month of July contains the regrettable announcement that the San Jose Scale has been found in the province of Quebec. This insect, as is well known, has done a tremendous amount of damage in the United States and in some parts of Ontario. In Quebec it was found first of all on the bark of a young mountain ash tree near Ste. Anne de Bellevue. Quebec scientists believe that the insect was brought in with a young tree from an Ontario nursery. A careful watch is being maintained to prevent the further infestation of trees in Quebec.

QUEBEC FORESTRY NOTES.

There are now fifteen township forest reserves in the Province of Quebec. These are chiefly scattered over the Lake St. John district and on the south shore of the St. Lawrence. Altogether there are now 220,000 acres in these reserves and the work has been so successful that there is a steady demand for the setting apart of more reserves. These reserves are in ungranted and unlicensed lands and before the formation of the reserve every man took what suited him regardless of the consequences. Now each reserve is, as far as possible, divided into twenty parts, one of which is to be cut over each year. Each reserve is in charge of a resident ranger who grants permits, directs the cutting operations and sees that the regulations are obeyed. One of the most gratifying features of the establishment of the reserves is the spirit of community ownership which has been developed. Township residents feel that the reserve is theirs and assist the ranger in enforcing cutting regulations and in preventing waste.

The provincial forest nursery at Berthierville continues to grow. This year 78,000 seedlings were supplied by this nursery to provide for the planting of sand lands in Lachute and elsewhere as described in the May issue of the *Canadian Forestry Journal*. So far white pine and spruce have been the chief species grown. The department is studying Scotch pine and European larch with a view to their use if found suitable. Farmers are supplied with seedlings for planting wood lots at a nominal price and the demand for these keeps pace with the growth of the nursery. Much more interest is now taken in replanting work than a few years ago. Colleges, convents and institutions are following the work and adopting methods found successful. The city of Three Rivers was not greatly interested in trees when the nursery at Berthierville was established; now the work there has shown what can be done the citizens are working out a comprehensive plan for the beautifying of their streets.

Mr. G. C. Piche, Chief of the Quebec Forest Service, has purchased 4,500 acres of waste land near Shawinigan Falls. It is a cut over and burned over tract, coming up to hardwoods. Mr. Piche is going to see what is the best method of handling such a tract in this locality. It is likely he will permit the use of it as an experimental ground by the students of Laval University Forest School.

The railways are now co-operating with the Forest Service of the Government of Quebec in regard to the use of permits to ship wood on railways. In rural Quebec lands are either patented to farmers, licensed to lumbermen, or unpatented; that

is to say, still in the hands of the Crown. Holders of patented and licensed lands, of course, have the right to ship timber and wood, but in the past there has been a great deal of trespassing upon Crown lands by men of no substance. Consequently when wood stolen from Crown lands was shipped out there was no way of recovering dues or fines. Now every one must have a permit to cut wood on Crown lands and if this permit is not produced the railway agent will refuse to receive wood for shipment. Thus the professional trespasser is being checked and the Provincial treasury enriched.

PUT OUT YOUR FIRE!

When you are camping, put out your fire! Near Peterboro, in the region of the Pigeon and Bald lakes, a disastrous fire was started last week by a party of campers leaving behind them an unextinguished fire. Their fun over, they left the place apparently without thought of the danger. The result was that a large territory was burned over and much property destroyed. Most forest fires originate in this way. Carelessness with camp fires is a major cause. A very little precaution would save a fortune in Canada. It only takes a minute or so to drench one's fire until only steam is visible and all danger is passed. Nearly every camp fire is close to the water, making the operation of little trouble or exertion. When next you camp, and your fire has served its purpose, put it out.—Ottawa Citizen.

Douglas fir has an average of five years life when untreated; treated, it lasts twelve years. Hemlock, lasting as a natural wood five years, doubles its term of life when treated, as does tamarack. Spruce is one of the species which when untreated decays most quickly, lasting only three years. If treated it will last twelve years, its life being thus increased 300 per cent. To sum up, wood preservation not only prolongs the life of durable timbers, thus decreasing their annual consumption, but also permits the substitution of inferior species, whose use considerably reduces the drain upon the more desirable kinds.

WINNIPEG CONVENTION REPORT.

The report of the Winnipeg Convention has been completed by the printer and it is expected that within a week or ten days after receiving this copy of the *Journal* members of the Canadian Forestry Association will have the report in their hands.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

The plan inaugurated during the past month by the Secretary for obtaining from members news of their doings has met with gratifying success. In response to the letters addressed to members several interesting replies have been received, some of which are quoted in full below.

Almost the first reply received was from the President of the Society, which it is only fitting should be given precedence. Dr. Fernow's note is as follows:—

Dr. Fernow has spent his vacation in his summer home at Point Breeze, N. Y., U.S.A., revising or re-writing, at least in part, his *Economics of Forestry*, the book having become thoroughly antiquated, especially in its statistical data and in the chapter on 'The Forestry Movement in the United States.' In July he attended the forestry conference in Sunapee, N. H., U.S.A., and delivered an address on 'A Plan Adequate to Meet Our Needs for Wood and Timber,' in which he argued that forest planting on a large scale, systematically, is alone capable of meeting the future demands for timber in the United States, and proposed a plan by which twelve hundred million dollars were to be spent in that direction during a campaign of sixty years, or, as he expressed it, 'two Dreadnoughts a year.' Dr. Fernow is now (Aug. 13) on an excursion to the West with the International Geological Congress.

Quebec Forest Service.

Avila Bedard, M.F., is back from Europe. He has visited Great Britain, France and Belgium.

The Province of Quebec has now sixteen forest engineers in the Forest Service. Two (Piche and Bedard) from Yale and the other fourteen are graduates of the School of Forestry of Quebec.

The Forest Service is devoting much attention to the forest inventory. All the parties in the field are covering different strips, etc., so that a very good knowledge of the forest conditions will soon be obtained.

The appropriation of the Forest Service is now \$100,000 per annum, whereas it was only \$55,000 in 1909. It means that the Gouin government is desirous to give all the necessary funds to obtain a good and progressive service.

The revenues of the Department of Lands and Forests for the fiscal year end-

ing June 30th last will exceed \$1,750,000, a substantial increase over the preceeding years. Since 1908, every year has seen the revenues increasing steadily.

Advances in B. C.

H. R. MacMillan, Chief Forester of British Columbia, writes in part as follows:—

'Mr. Price is now with us and we are working on general re-organization of our work. One of the most important features from a forestry standpoint is that regulations for brush disposal, fire protection, and reproduction of valuable species are now being included in all Forest Branch timber sales. One hundred and fourteen timber sales are now under consideration, aggregating a value of \$460,000. Timber is sold only for immediate cut. One hundred and eighty-eight miles of telephone line and 134 miles of trail for fire-protective purposes are now under construction for the Forest Branch.'

Fire Protection in Quebec.

W. C. J. Hall, Superintendent of Fire Protection for the Province of Quebec, writes as follows:—

'The fact of all railways in this province, except the Intercolonial Railway and the National Transcontinental Railway, being controlled by the Dominion Board of Railway Commissioners and the Quebec Public Utilities Commission, and by having been appointed by both bodies as Provincial Fire Inspector renders my duties particularly interesting.

'I was surprised to see the readiness with which the railways met the provisions of Orders 16570 (now replaced by Order 107) and 72, respectively, and co-operated with the Inspector in Chief for Canada, Mr. Leavitt and myself. I had all the lines inspected for hazardous sections and established special patrols thereon, which I may say have been regularly maintained. These special patrols consist of motor-cars, velocipedes, and track-walkers, according to the tastes of the various railway superintendents. Fires on or off the rights of way are reported to me promptly, as a rule. I have a staff of seven Inspectors travelling over the railways, not devoting the whole of their time to this object, but a considerable part of it.

'Up to the time of writing we have had no serious fire on any of the railways, ex-

cept one, and this one came from a fire which started about three miles distant, from a settler's slash. A very interesting bit of work is being handled now, namely, burning the right of way through timbered lands, and so far my Inspector has handled this work with great success. We have several miles of this to attend to; if we get through with it successfully it will be an object lesson. We burn at night with a good force of men handling it, first seeing that the slash is separated from the forest by lanes each side. The Inspector superintends the whole work and no burning can be undertaken without his consent.

'The relations between the Quebec Government and the Federal authorities, i.e., the Board of Railway Commissioners, are most cordial; we have joined forces for the public good, and work hand in hand, with the result that railway conditions in Quebec province are probably more advanced in the line of protection than in any other province; at all events the protection is more complete owing to action of the Quebec Public Utilities Commission. We hope to obtain control over the Intercolonial Railway and National Transcontinental Railway before long.'

A Mountain Climb in B. C.

D. Roy Cameron writes under date of Aug. 12:—

'Mr. Clyde Leavitt and myself made an interesting trip, towards the end of July, from Ashcroft to the summit of Cairn Mountain (elevation 7650 feet) situated in the Hat Creek Forest Reserve. The idea I had in making the trip was to show Mr. Leavitt some very fine sheep range available on the summits of the Clear Mountains above timber line.

'Starting from Ashcroft early in the morning by team, we reached the Amphitheatre Ranger Station on Oregon Jack Creek, seventeen miles distant, for an early lunch. Here we changed to saddle horses, and, accompanied by Forest Assistant Alan E. Parlow with a pack-horse in tow, set out for timber line, which we made about six o'clock. Parlow was left here to cook supper, while Leavitt and I proceeded to the summit. From this point a magnificent view is obtainable of the Cascade Range, which rises 8,000 feet straight out of the Fraser Canyon. Unfortunately the setting sun threw the mountains into shadow so that details were lacking, but even at that the scene was well worth the climb.

'On returning to timber line a demonstration of gastronomic ability was given by all, after which we retired to a shelter improvised out of a pack-cover.'

The change from the stifling heat of Ashcroft to the chilly winds of timber-line was very acceptable.

In the morning we found that one of the horses, supposedly gentle, had decided antipathies to making the descent, probably thinking 10,000 acres of fine range enough for his simple needs. Then ensued a Wild West Show during which it was discovered that the combined roping ability of the outfit was 0.00%. A thorough test of this made a change of tactics seem desirable. Snaring was decided on, and, when this was finally managed after much patient (or impatient) manoeuvring, the very much disgusted horse was finally snubbed around a small white-bark pine, and the incident closed. Fuller details and additional color can probably be obtained from the Chief Fire Inspector for the Railway Board, on request.

A record trip to town completed an enjoyable two days' trip.

Some fine pictures were obtained by Mr. Leavitt but the finest of all was unfortunately never taken.

In Southeastern British Columbia.

J. D. Gilmour, District Forester at Cranbrook in the B. C. Forest Service, writes:—'Since December, 1912, I have been stationed at Cranbrook as District Forester in the Provincial Forest Service. The work includes all business in connection with the Forest Branch in this district. This season we are laying emphasis chiefly on fire protection, and are building trails and telephone lines for that purpose. The summer so far has been favourable. The dangerous periods have been short, and there have been few fires entailing extra expense, and all these have been discovered and extinguished before they had much start. The total area burned over is negligible. We are also working to obtain co-operation with lumbermen in the burning of slash, and have met with some success; we look for more in future. Already over one thousand acres of slash has been successfully burned in places where it constituted a grave danger.

Top-logging and Dynamite.

Ellwood Wilson, chief of the Forestry Department of the Laurentide Co., Ltd., has sent some interesting notes as to his doings and experiences of the month, together with interesting additional notes.

On July 14th, Mr. Wilson took Mr. Kieffer, of the Forestry Department of the Quebec Government, to inspect an area of about three square miles which had been lumbered by the Laurentide Co., Ltd., and on which all tops had been lopped to the tips of the trees. The results were very satisfactory; the brush lying flat on the ground and many of the branches already beginning to decay. The woods, it was found, were left in good condition and were much easier to travel through; there was much less risk of fire,

and, if fire should start, it would be much easier to extinguish.

On July 15th Mr. Wilson left to attend the meeting of the Society of Eastern Foresters as the guest of Dr. Hugh P. Baker, Dean of the Forestry Faculty at the University of Syracuse. Foresters from all the Eastern States were present, as well as professors from Yale, Cornell and Syracuse Universities. The meetings were held at the fine new Ranger School at Wana-kena, on Cranberry Lake, and were of the greatest interest, the discussion on top-logging being especially so. It was agreed that top-logging was absolutely essential from the standpoint of fire protection and reproduction, both in soft woods and hardwoods and it was the general opinion that it was not feasible or necessary to pile or burn the brush. The cost derived from a number of experimental plots and from the experience of the Adirondack lumbermen, who are compelled by law to lop their tops, was from 20 to 30 cents per thousand feet, board measure.

A very interesting experiment was tried by representatives of the Dupont Nemours Powder Company for the benefit of the assembled foresters. In an old lumber slash piled with debris, which had once been run over by fire, dynamite cartridges were placed in the ground for a distance of over 250 feet, spaced about two feet apart and set by making a hole, by hand, with a crow-bar and putting in the cartridge, then tamping with earth rammed down with a piece of broomstick. The depth of the holes was about 15 to 18 inches. It took about an hour to set the cartridges. The slash and ground were then sprinkled with kerosene oil from watering cans and set on fire. As the flames reached the line of dynamite, the latter was exploded by electricity, and when the smoke had cleared away the fire was found to be stopped by a trench about three feet wide and nearly three feet deep, blown right down into the mineral soil, and leaving the soil so loose that, had it been necessary, earth and sand in any quantity was available for throwing on the fire. Dead and down logs and stumps were blown out of the way. For all but a very bad top fire this method would have proved eminently satisfactory for stopping it and by going sufficiently far ahead of a forest fire and laying dynamite the fire could either be completely stopped or could be narrowed down very quickly, cheaply and surely. Experiments were tried by laying the dynamite on top of the ground, but the results were without value.

Mr. Wilson then went to the meeting of the Society for the Protection of New Hampshire Forests in connection with the Directors of the American Forestry Association at Soo-nipi Lodge, Lake Sunapee, N.H. This was a most interesting and in-

structive meeting and many notable people were present and spoke, including the Governors of Vermont and Maine, the Bishop of New Hampshire, Drs. Fernow and Roth, Profs. Toumey and Chapman, Dr. Rothrock and S. B. Elliot, of the Pennsylvania Forestry Commission, Dr. Henry S. Drinker, President of the American Forestry Association, and members of the U. S. Government Service and foresters from several States.

Dr. Fernow's address in which he advocated planting rather than natural reproduction was very important and interesting. He discussed this question at length, quoting German experience on the subject and concluded that it was the duty of the National and State Governments to take up planting on a large scale, and that vigorously.

Dr. Roth's address on conditions in Michigan and Wisconsin was very interesting, as was that of Professor Toumey on European conditions.

Mr. Wilson spoke on Commercial Forestry, and advocated planting for large corporations and especially for pulp and paper companies, and discussed the future supply of pulpwood and the increasing use of balsam fir in pulp-making. He also described the planting experiments of the Laurentide Co., Ltd.

Mr. G. C. Piché, Chief of the Quebec Forestry Service, Mr. Wilson reports, has fourteen parties at work making estimates and growth studies. A report has been made on forty square miles showing the amount of timber, the different species and their rates of growth, etc., and is a very important piece of work. The report shows that we must modify our ideas as to the amount of standing timber and lower them considerably.

LUMBERMEN AND FORESTRY.

Lumbermen are sometimes accused of hostility or at least indifference towards scientific forestry, but this, as everyone knows who is acquainted with the facts, is not the case. At a recent meeting of the North Idaho Forestry Association, composed of lumbermen and timber owners, the sum of \$58,000 was placed to the University of Idaho for a new forestry building and equipment. Officials of the University declare that sixty per cent of the timber now wasted in manufacture may be saved, and it is to devise methods to show this that the new building is required. The equipment includes a saw-mill plant for the use of students in learning the practical side of the industry. This is in harmony with the action of the Massachusetts Lumber Manufacturers' Association in supporting a chair of applied forestry and practical lumbering in the Yale University Forest School, for which the Association has voted \$100,000.

WORK IN THE ROCKY MOUNTAIN RESERVE.

In the July issue of 'The Rocky Mountain Review' whose appearance was mentioned in these columns a couple of months ago, there are evidences of efficiency and careful management on the part of the officers of the Rocky Mountain Forest Reserve. A series of tables indicate briefly the exact extent of the work carried on, the difficulties encountered and the business transacted. Fires are divided into three classes, of which class A are small fires, such as spreading camp fires, not covering more than a few square rods; class B, fires requiring assistance and extra expense, generally not covering more than five acres; class C, large fires requiring extra help and expense. The figures in these classes for the quarter ending on June 1st are as follows:—21, 3, and 9, a total of 33 fires. Of these 2 were started by railroad construction, 22 by locomotives, 1 through clearing land, 4 through camp fires, 1 through lightning, 1 through dropping burning match, and of two the causes were unknown. Of permanent improvements there were constructed the following:—roads $7\frac{1}{4}$ miles, costing \$1,032.13, standard trails 112 miles, costing \$4,086.87; secondary trails, 215 miles, costing \$3,161.97, telephone lines, 51 miles, costing \$5,367.47, fire guards 330.5 miles, costing \$304.11. There were also erected 2 district ranger stations, at a cost of \$2,313.09, 13 ranger cabins, costing \$3,891.42, 8 barns, at a cost of \$1,633.48, 6 bridges, costing \$4,074.34, and one lookout tower, costing \$28.31. There were also uncompleted projected with a total value of \$4,860.72. In timber and hay receipts the reserve officers took in \$31,221. This sum was divided as follows:—Crow's Nest, \$8,979.39; Bow River, \$20,428.28; Brazeau, \$1,436.50; Cooking Lake \$28.45; Cypress Hills, \$348.38.

DOUGLAS MALLOCH'S NEW BOOK.

Douglas Malloch has written another book and the *American Lumberman* has published it. In case some do not recall the work of this writer we reprint the real foreword which appears on the protection cover. 'Douglas Malloch' is a western poet who has spent much time in the forests, writing songs for lumbermen. His poems have travelled by word of mouth from pioneer to pioneer. In this volume appears 'Today' which has been reprinted a hundred times, and has been attributed to many and diverse sources.'

Those who think poetry cannot deal

with such commonplace subjects as lumbering should read this book. They will get new views on poetry and on lumbering. The first volume 'In Forest Land' was good: 'The Woods' is better and it proves, both that Mr. Malloch is a real poet, a poet with good red blood in his veins and in his verse; and that he has the strength to resist the current misconception that strength consists in coarseness. Some of the subjects he handles are not parlor themes but somebody ought to handle them, to make them live, to make the careless world see at what cost of labor and lives the world's comforts are secured. While there is no imitating of any other poet some of the lines remind one of the strongest phrases in 'The Sons of Martha.' And through it all the poet never loses his moral bearings or his optimism. There are nearly fifty poems in the volume many of which we would like to quote such as 'Children of the Spring,' 'The Pine Tree Flag,' 'Down Grade,' 'The Soul,' 'The Sky Pilot,' 'Brothers and Sons,' but lack of space forbids the presentation of more than two 'Possession' and 'Today,' which are here given.

POSSESSION.

There's some of us has this world's goods,
An' some of us has none—
But all of us has got the woods,
An' all has got the sun.
So settin' here upon the stoop
This patch o' pine beside,
I never care a single whoop—
Fer I am satisfied.

Now, take the pine on yonder hill:
It don't belong to me;
The boss he owns the timber—still
It's there fer me to see.
An', 'twixt the ownin' of the same
An' smellin' of its smell,
I've got the best of that there game,
An' so I'm feelin' well.

The boss in town unrolls a map
An' proudly says 'It's mine'
But he don't drink no maple sap
An' he don't smell no pine.
The boss in town he figgers lands
In quarter-sections red;
But I just set with folded hands
An' breathe 'em in instead.

The boss his forest wealth kin read
In cent and dollar sign;
His name is written in the deed—
But all his land is mine.
There's some of us has this world's goods
An' some of us has none—
But all of us has got the woods,
An' all has got the sun.

TODAY.

Sure this world is full of trouble—
 I ain't said it ain't
 Lord! I've had enough, and double,
 Reason fer complaint.
 Rain an' storm have come to fret me,
 Skies were often gray;
 Thorns an' brambles have beset me
 On the road—but, say,
 Ain't it fine today!

What's the use of always weepin';
 Makin' trouble last?
 What's the use of always keepin'
 Thinkin' of the past?
 Each must have his tribulation,
 Water with his wine,
 Life it ain't no celebration.
 Trouble? I've had mine—
 But today is fine.

It's today thet I am livin'
 Not a month ago,
 Havin', losin', takin', givin',
 As time wills it so.
 Yesterday a cloud of sorrow
 Fell across the way:
 It may rain again tomorrow,
 It may rain—but, say,
 Ain't it fine today!

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SAWDUST BRIQUETTES.

A new industry may be successfully combined with the planing mills—that of making of the sawdust briquettes to be used for firing under the boilers, thus considerably decreasing the cost of the fuel to the mill owner. According to a note in a recent issue of the *Scientific American*, this is being very advantageously done in Germany. The sawdust is automatically gathered and conveyed to a place near the presses. From here it is carried over a heated belt-conveyor to a drying-room. This is a cylindrical revolving drum about two feet in diameter and twenty feet long. In this drum the sawdust is partially dried, the pitch contained in the wood is softened, acting hereafter as a binder. From here the sawdust is conveyed over an incline to the after-dryer of the same shape as the first dryer, which forms a part of the press. Here it is submitted to a higher temperature to drive off all the moisture, and kept running forward toward the end of the after-dryer by rotating paddles. At the end of this after-dryer, the sawdust falls through an opening into the trough of the press.

At the end of each pressing operation, which takes place about twenty-four times a minute, a briquette is made about $5\frac{1}{2}$ inches by $2\frac{7}{8}$ inches by $1\frac{1}{8}$ inch, weighing between one half and three quarters of a pound. From the press the briquettes are carried by another belt-conveyor to a cooling room, and are then ready for use.—*Paper Inc.*

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CONTENTS:

Page.

Editorial.....	145
An Adequate Plan: Dr. Fernow.....	147
Quebec Provincial Nurseries.....	149
Forest School Notes.....	150
Norfolk County Replanting.....	151
Protection Along Railways.....	153
Dominion Forest Branch Notes.....	154
Forest Products Laboratory.....	154
British Columbia Work.....	155
Reserve Regulations Revised.....	157
U. S. National Conservation Congress.....	157
With the Forest Engineers.....	158
Quebec Forest Service.....	159

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WINNIPEG MEETING REPORT.

The report of the Winnipeg Convention has now been mailed to all our members. While not so long as some previous reports it is one of the most important issued for some years, and all our members should read it carefully. It should be in the hands of every member before this and any who have not received it, or who would like an extra copy to send to some one who might be interested in forestry should notify the Secretary. Address The Secretary Canadian Forestry Association, Canadian Building, Ottawa.

FOUNDATION WORK.

In taking stock of the forestry position it is seen that there has been a good deal of activity along certain lines with delay and hesitation along others. There is more machinery than ever before, more money being spent. The effort must now be to so balance the effort as to keep the cart behind the horse. What is needed is organization, co-ordination and the doing of first things first.

The statement was made at a recent meeting that there were thirty-six forestry schools in the United States, and that now nearly every state had its state forester. In some respects, therefore, forestry is coming on with a rush, so that there is need of directing this force into right channels. This large body of men talking about and working in forestry will awaken interest. The state foresters in their efforts to 'make good' will develop many projects that should have been

started years ago. The graduates of forest schools will open out useful work in directions that at present are not thought about. The case for forestry is so good that the more it is talked about the more progress is going to be made.

But while progress is being made on the popular side foundation work must not be overlooked. The whole art is so new on this continent that however sure conservationists are of the necessity and profit of forestry, the man in the street has yet to be convinced. People would be aghast if told by responsible men that in so many years agriculture or manufacturing would come to a stop, but the public either does not believe the forests will disappear in the periods named for different areas, or it does not realize the economic results of that disappearance.

As to how close we are to the time when our virgin forests will be depleted, while there are differences in details there is a general agreement that it will not be long. For the United States the National Conservation Commission put it at thirty years from 1907 and subsequent investigation has not materially altered their conclusion. In Canada some industries are largely existing on second growth timber, while industries in our old hardwood belt are importing five times as much hardwood as we produce. It takes from sixty to one hundred years to grow a timber tree. If our virgin timber is going to disappear in less than half a century then, even if we start reforesting now, there is going to be a gap between the old and the new. And we have not started reforesting either by natural regeneration or by planting.

But even more serious than this is the fact that the thing we say we believe we ought to do we are not undertaking as if we meant it. Everybody is agreed there should be

fire protection, that our existing supplies should be harvested without waste, and that cut over areas that are absolute forest land should be allowed to grow up again into timber, even if we do not go the length of seeding or planting.

One of the most vital things required to get efficiency in carrying out work, all agree to be necessary, is the extension of civil service reform to the outside services federal and provincial. The *Ottawa Citizen* dealing with this matter says:—

The position of the outside government servant, not appointed by the Civil Service Commission, is demoralizing and humiliating to a degree. No matter how efficient the outside government servant may be, merit is not taken into consideration when the question of promotion comes under review. The permanent officials at headquarters are not allowed to appoint, dismiss or promote an outside servant without the approval of the political hierarchy.

The newspaper is here discussing the customs service but the argument applies with even more force to the forest services because the men are miles away from the eye of superiors and from the restraining and correcting force of public notice and public opinion. Urging the extension of civil service regulations to the outside services is not as pleasant and popular work as opening forestry schools or securing the appointment of state or provincial foresters but it appears to be the most necessary work now before the Canadian Forestry Association and indeed before the Canadian people. There is no reason to doubt the intention of the Dominion Government, to extend civil service reform to the outside services but the pressure against this is tremendous on the part of party workers and it is only fair to the Government and to governments generally that the friends of forest conservation should throw their weight on the scales that the balance may be in favor of reform.

A Plan Adequate To Meet Our Needs For Timber.

Synopsis of an Address by Dr. B. E. Fernow at the Annual Meeting of the Society for the Protection of New Hampshire Forests.

Dr. Fernow began by stating that there was probably now nobody who had not grasped the idea that the fundamental object of forestry was to reproduce the forest crop which we had used, and, if possible, in better form. Looking over the United States there was little attempt at reproduction. The population was still growing, and while a reduction in consumption, from the present 250 cubic feet per capita per year to something like the consumption of European countries, was inevitable this change would not be made readily.

Dr. Fernow then quoted from the report of the National Conservation Commission to the effect that the cut was more than twice the annual growth and that there was then (1907) hardly thirty years supply in sight, so there was no time for dilly dallying.

He urged that fire protection and conservative logging would not meet the need as these were concerned with the *utilization* of the existing crop but did nothing to *insure* a new crop.

It was true that fire protection was essential to forestry as no one would invest money with a high fire hazard but fire protection had been so much improved of late years that the time was more propitious for pressing for reforestation.

Holding that, in spite of substitutes, timber would continue to be used and would continue to increase in price, and also that the natural regeneration method of timber reproduction would be found nearly as costly and far less effective than replanting he wished to go on record as holding the opinion that 'our future needs can not be satisfactorily and adequately provided for until we take recourse to planting operations on a large scale.'

Within twenty years the United States would have reached the point where virgin timber in which natural regeneration might still be practiced would be near its end. The country's needs must then be supplied chiefly from the so-called second growth and volunteer growth; and the area capable of restocking only by artificial means would have increased probably to 250,000,000 acres, over half the remaining forest soil. (Dr. Fernow estimated that in 1907 the forest area of the United States was 580 million acres). Then the people would be forced to plant whether they believed in that method or not.

It was useless to expect private enterprise to undertake this task owing to the long time element involved. The railways, needing a constant supply of ties, and paper companies, whose big plants were built with the idea of continuous forest supplies, might embark in tree planting, but Dr. Fernow was afraid that for the rest they would have to abandon the idea of individual endeavor and learn that community interests must be attended to by the community. In the end only the state and the municipality could be expected to provide for a distant future. There were foolish notions abroad as to the distance of that future and how long it took to grow a log tree. With most species in most localities nothing could be expected in less than 60 to 100 years.

He had no cut and dried plan for this except to set every state forester, state commission and forestry association thinking, to make them realize that their business was not only to conserve existing resources but to create new ones, and to recognize that this was a more serious matter than could be met by the distribution of a few thousand trees to private planters; that it required *systematic procedure on a large scale*.

Each state forester should make a canvass of his state to ascertain what lands could be left to private planting and what to municipal or state enterprise. He should work out a plan of state co-operation which might take the form in the case of municipalities, besides furnishing plant material and advice, of pledging the state's superior credit for raising the necessary funds by bond issues for acquiring and reforesting waste lands and in return securing supervisory power for the state. For New England municipal action was perhaps the most promising although in general direct state control might be preferable.

Dr. Fernow gave the following example to illustrate the method of procedure.

'Let us assume that a town has bought 5,000 acres of waste lands, which it could secure for say \$15,000, borrowing the money from the state at 3%; the 5,000 acres to be planted in a 25 year campaign; that is at the rate of 200 acres per year, at a cost of \$8 per acre; the annual outlay of \$1,600 to be furnished by the state from year to year, when the interest charges will be \$450 on the original investment and a series of interest payments of \$48,

increasing annually by \$48. The loans will then in the twenty-fifth year have accumulated to \$55,000 and the interest accumulations to \$26,870 or \$1,075 per year, and the highest last annual charge \$1,650, amounts not difficult to raise. After the planting is finished the annual interest charge remains stable at \$1,650. Now each year 200 acres may be thinned and every five years the thinning repeated. A net result of \$2 per acre for the first thinning (at that time wood prices will be higher) \$3 for the second, and \$3.50 for every subsequent thinning would be a reasonable assumption. In other words for the first five years after loans and planting have been completed the interest charges are met to the extent of \$400, in the second quinquennium to the extent of \$700 and in the third quinquennium a surplus begins to appear. Now arrangements for refunding the loan may be made at once, or else merely interest may be continued to be paid out of returns for thinning, the town receiving small incomes until the sixtieth year, when the first 200 acres may come to harvest yielding not less than \$120,000 (likely much more at that time) wiping out the loan and leaving a property worth several million dollars producing annual revenue.

'All that the state has done is to lend its credit, not one cent is given in charity, and the town has made no expenditure except for the care of the property.'

'That these calculations are not chimerical may be learned from the experiences of France.'

'Here the state reforested during the last century 200,000 acres of sand dunes at a cost of \$2,000,000. Of this 75,000 acres were sold reimbursing the total cost of the 200,000 acres and \$140,000 to boot, and leaving a property now valued at \$10,000,000.'

'In the Landes the state, municipality, and private owners planted nearly 1,750,000 acres at a cost of \$10,000,000, the value of the recovered properties being now placed at \$100,000,000 based on their annual production.'

'Some 200,000 acres of poor land, unhealthy useless waste, in La Sologne was planted by a private association at a cost of \$5 per acre. These lands which fifty years ago could not be sold at \$4 per acre now bring in over \$3 per acre annual revenue, being valued at \$18,000,000.'

'These are actual results achieved and not fancies or forecasts.'

Dr. Fernow went on to apply this to larger areas. In New England he estimated there were five million acres immediately ready for planting. This on a twenty-five year campaign would necessitate planting 200,000 acres per year. Some planting was now being done but in the face of these figures did present work not look amateurish and inadequate?

Such an area (which was twice the forest area of Bavaria and Baden combined, producing \$10,000,000) planted with white pine at \$10 per acre and properly managed would produce annually its 2,000,000 M feet of lumber worth even at present stumpage prices \$20,000,000 and be an ample supply for any population that might then be located in New England.

Finally Dr. Fernow applied his figures to the United States and pointed out that now the federal government was giving aid to reclamation schemes, good roads, waterways, etc., it would not be out of the way to include reforestation in this list.

In 1970, by which time the most advanced of the forests planted now would begin to mature, Dr. Fernow estimated that the population of the United States would have become 225,000,000, and assuming that the per capita use of timber had decreased to that of England, 14 cubic feet per year, this would require the cut of close to 1,000,000 acres per year of first class forest growing for sixty years at the rate of four hundred feet B M per year. To keep up a continuous supply 60 million acres must be in that producing condition. The probability was that not less than 100 million acres would be required to satisfy all needs for wood materials.

Since less than \$20 per acre would be required for planting and interest account, an annual loan of \$20,000,000 for sixty years,—two dreadnoughts a year—would be ample provision. Dr. Fernow's concluding summary of his plan was as follows:

(1) Each state to ascertain its quota of planting area, classified for systematic procedure in its recovery.

(2) A co-operative financial arrangement by which municipalities may secure the credit of the state, and states the credit of the federal government for the purpose of acquiring and recovering their quota.

(3) State planting to be done on a large scale.

'If I have not developed a very definite and adequate plan to meet our need for wood and timber in the future I hope I have at least opened up a line of thought which may tend to its formulation.'

MR. MALLOCH'S POEMS.

Some requests have been made for information in regard to Douglas Malloch's new book of poems 'The Woods' which was reviewed in the September number of *The Canadian Forestry Journal*. Mr. Malloch is the Associate Editor of the *American Lumberman*, 431 South Dearborn St., Chicago, Ill. The American Lumberman Co. are the publishers of the book, and inquiries in regard to it may be addressed to them.

Quebec Provincial Nurseries.

Description of the Forest Nursery Station at Berthierville.

The Secretary recently paid a visit to the Quebec Government Forest Nursery near Berthierville. This nursery, which consists of about sixty acres, is situated on the north bank of the St. Lawrence River near the town of Berthierville, and nearly opposite the city of Sorel. The site is well chosen both as to the character of the soil and for convenience in shipping the little trees by rail and water. The farm house and barns have been fitted up for the use of the resident forester, and accommodation is provided for the students who in the spring do the work of preparing the beds, sowing the seed and transplanting the seedlings into the nursery rows.

The species chiefly grown are pine and spruce. White and red pine occupy a large place, and the nursery is also making a thorough test of Scotch pine, which promises to do particularly well in the Province of Quebec. Tamarack and European larch are also grown extensively, and another conifer that promises

well is the red fir, the seed of which was brought from Idaho. Of deciduous trees, the ash, elm and maple are the chief representatives, black walnut six years from the seed is about nine feet high, and some European walnut planted two years ago is also making good growth. As an experiment there are some specimens of tulip trees or yellow poplar being grown, and while this tree has been frozen down the last two winters to about three feet above the ground, it is hoped eventually to acclimatize it.

The Secretary was shown over the nursery by Mr. G. C. Piché, Chief of the Forest Service, who pointed out that the nursery had now reached a size of five hundred beds. In these there were a few failures, but in nearly every case the reason for these was known, and as the work proceeds these can be avoided in future. The nursery has also been equipped with a water system which will materially improve the working conditions.



View in Quebec Government Nurseries Berthierville, Que., looking toward St. Lawrence River.

FOREST SCHOOL NOTES.

The opening of another college year finds professors and students returning to work, fresh and enthusiastic.

While definite information is not yet to hand it is expected that the number of students at the Faculty of Forestry, University of Toronto, will be about the same as last year.

The Quebec school reports a somewhat decreased number of students this year, owing to higher standard for entrance. The wisdom of so raising the standard, however, will certainly be shown in future years. Mr. G. C. Piché, the Director, writes:—

The Forest School of Quebec has re-opened with a new class of nine students, of whom three are Bachelors of Arts. The direction having raised the standard of the examinations for entrance, very few candidates were able to satisfy the new requirements, hence the diminution in the number of new students; yet the number in attendance, comprising the other classes, will be about thirty-five.

Prof. R. B. Miller, of the Forestry Department, of the University of New Brunswick writes: We have about thirty-five students enrolled in forestry, viz., four Seniors, five Juniors, fifteen Sophomores, and eleven Freshmen. Out of a Freshman class of thirty-six in the University, eleven enrolled for the forestry course. The men returning from the West are full of enthusiasm and new plans to be carried out, and this promises to be a very successful year. Among the new lines which will be attempted will be a small lumbering operation on the college lands, the building of three miles of telephone line to the camp, the making of trails and roads, a continuance of the work in estimating on the college lands, with a rough working plan for the same, a topographic survey of the college grounds by the Seniors and, possibly, a new course in forest entomology given by the Provincial Entomologist. The woods are in fine condition this fall, as there has not been much rain, and until cold weather a large amount of field-work will be carried through. The cutting of cordwood and logs will allow a further chance for work in the winter months. The Seniors have been assigned the new Victoria Mills of Donald Fraser and Sons, Limited, upon which they are to make a report. This mill is equipped with a double-cutting band-saw and all the modern appliances for manufacturing lumber, lath and shingles.



MR. G. C. PICHE, Chief Forester of Quebec.

From this nursery there are sent out, first the trees for the planting of the sand lands in settled districts, which is becoming an important feature of Quebec work; and also the trees furnished to farmers for the planting of their woodlots. These latter are sent out at a nominal cost, and the nursery will be enlarged as rapidly as the demand from these two sources increases.

TREES.

I think that I shall never see
A poem lovely as a tree.

A tree whose hungry mouth is prest
Against the earth's sweet flowing breast;

A tree that looks at God all day,
And lifts her leafy arms to pray;

A tree that may in summer wear
A nest of robins in her hair;

Upon whose bosom snow has lain;
Who intimately lives with rain.

Poems are made by fools like me,
But only God can make a tree.

JOYCE KILMER.

Replanting in Norfolk, Ont.

The following article is abbreviated from the *London Free Press* which newspaper also kindly loaned the accompanying engravings.

There is perhaps no other section of country in Ontario which has gone through the successive changes that may now be traced in the lower part of Norfolk County, in the famous sand-blown lands near St. Williams. Nor, possibly, anywhere in Ontario, is there a movement that has more of interest in the results that are being produced than this joint work of reforestation and producing treelets for the whole province that is being carried on here. For the work that the Ontario Government is carrying on at its nursery stations here is of a double character, being applied not only to sand ridges of Norfolk County but made also the center from which go out all over Ontario the little trees that some day will be turned into wealth for this province.

From this Norfolk nursery station there are now being sent out each year hundreds of thousands of little treelets. These go to farmers, to municipalities and to companies owning timber lands. The City of Guelph two or three years ago set out property a few miles outside the city. It is the belief of the Guelph waterworks board that eventually they will have a steady revenue coming in from their forest area. On the property there was considerable standing timber when it was purchased. A certain amount has been cut out and sold at intervals and this will become a regular practice when the forest area has been further developed.

Norfolk County Changes.

Norfolk County, where the Government work is carried on, was one of the earliest settled counties of western Ontario. There were settlers in this district at the opening of last century, many of them United Empire Loyalists. The men who came in first found the whole country a forest and faced the task of clearing up their land before they could grow anything. It was a task the nature of which is hard to appreciate in these days when the older counties are so well cleared up. The farm which now forms the center of the Government's operations was settled as early as 1804, yet in 1908 it was bought by the forestry branch for \$5 an acre, and other near-by farms have been sold at a figure equally low. The reason is that in the century of its existence this farm property had undergone changes which made the price paid all that it was really worth. From forest to farm was the first transformation, then followed many years of tilling, during which its occupants 'never allowed anything in the nature of a crop to get above the ground without taking it off.' The result was inevitable. Year by year the productive power decreased; eventually there were fields that did not return sufficient to pay for the labour put upon them, then the owners and tenants moved elsewhere or took up some other work. The abandoned farm followed, saddest sight of all in this land of good farms and rich orchards and gardens.

The Sand Ridges.

Those who travelled through South Nor-

IN NORFOLK COUNTY.



This gives an idea of how the soil has disappeared since the forest was cut away and shows how young trees are again taking root.

folk 10 years ago, along the branch of the Grand Trunk Railway that runs from Simcoe to Port Rowan, saw stretches of almost absolutely barren sand ridges, stumps of trees showing up above the drift, once in a while an old shed or a wagon half buried in the sand. It was a dismal prospect after passing through the lovely farm and orchard country further north in this county. Yet it was the very prospect that one day was to attract the attention of a man who could see the possibilities of improvement.

That man came in the person of Prof. E. J. Zavitz, who had charge of the forestry work at the Ontario Agricultural College, and who was sending out from the nurseries connected with the college the little treelets that were required by the farmers of the province to restore their wood lots. He saw the possibilities of a work in Norfolk County that would restore in considerable measure the usefulness of these stretches of abandoned sand lands. When the situation was set forth to the provincial department he was authorized to move the Government's forest nurseries from Guelph to the new station at St. Williams and to begin the planting of these sandy tracts with trees suited to the locality. The idea in the minds of the officers of the department was that such a plantation would demonstrate to the farmers of Ontario how best to proceed with the reforestation of such lands elsewhere, in large or small tracts, and would also demonstrate that reforestation of considerable blocks of these lands could be profitably undertaken by municipalities or by individuals who could wait

the time required for returns. For reforestation does not give its return at once; it is a slow process to build up a forest that has disappeared.

Large Tracts Treated.

The work began with the purchase by the department of 300 acres of ridge land. This has been increased until now there is five or six times this area in process of reclamation. Seedbeds and nursery rows have been set out, and some of the worst hills those whose tops were blowing into the adjacent valleys and covering up the fairly good land there, have been planted out. These small trees, though planted in what seems a veritable sandbank, without a blade of grass to be seen for acres, have done well, and, small as they are, have held the sand from blowing. Fields fairly level and available for nursery beds have been sown to rye, cowpeas, clover, etc., and the soil enriched by turning in the crop. The results have been astonishing in many cases.

From these nursery beds hundreds of thousands of seeding trees go out to Ontario farmers and others. The demand is increasing year by year as the value of the work becomes known and the experiments which are constantly under way at the station are bringing together information that materially assists in the whole forestry movement. The trees set out in permanent location on the plantations include black locust, jackpine, Scotch pine and white and red pine, while experiments are also being conducted with ash, walnut, oak and butternut. It has been found that the black locust thrives best of all on these Norfolk sand hills, though jackpine and



Planting Seedlings in Nursery Rows.

Scotch pine are close seconds. The black locust has the very useful power, like clover in this respect, of enriching the soil in which it grows by the colonies of bacteria which adhere to its roots. Thus, quite outside of its use as timber, it is useful as a culture plant. The wood, though not well known in Canada, is highly valued for work requiring toughness and firmness. Insulator pegs, vehicle and railway car timbers and fence posts are uses to which it is now put.

On a recent visit to the station at St. Williams, Hon. W. H. Hearst, Minister of Lands, Forests and Mines, expressed himself as astonished and delighted with the work that was under way and the progress that was shown. He further declared that the movement would have his still warmer sympathy and support since he had seen for himself what was being done.

PROTECTION ALONG RAILWAYS.

One of the things that is demanding attention is the protection of forests along railway lines by the clearing of debris from a strip two hundred feet wide on each side of the right-of-way. Mr. Clyde Leavitt, Chief Fire Inspector for the Canadian Railway Commission writes of this subject:

'Provision should be made, by either legislative or administrative action or both, of all the Provincial Governments of Canada, for the enforced removal of inflammable debris on lands adjacent to railway rights of way. This is absolutely essential to a reasonable degree of safety from fire, of forests and other property along railway lines. The Dominion Railway Act requires that railways operating under Dominion charters shall maintain their rights of way free from dead and dry grass, weeds and other combustible matter. The Railway Commission enforces this provision. It also requires the use of the best fire-protective appliances on the engines and also that the railway companies maintain patrols and take adequate steps in reporting and extinguishing railway fires.

'Engines still throw some sparks, however, and fires along railway rights-of-way are started as well by smokers, tramps, and numerous other agencies, either careless or malicious. Unless immediately discovered and extinguished, fires starting on the right-of-way quickly spread to adjacent lands, where, in the case of forest lands, the almost universal presence of large quantities of dead, inflammable material, facilitates the rapid spread of the fire, and renders extinguishing difficult, if not impossible. This situation is especially bad in the case of the large areas of cut-over lands, which so gener-

ally parallel the railway lines in the non-agricultural sections.

'If the land or timber owners removed this material on a strip two hundred feet wide outside the right-of-way, on each side of the track, it would enormously increase the efficiency of the measures which the railway companies are required to take, and would without question decrease to a remarkable extent, the destruction from fires along railway lines. Not only would the destruction of much private property be avoided, but large quantities of young forest growth on cut-over lands would be given a chance to reach maturity, instead of being burned over periodically and so being kept in a perpetual state of unproductivity.

THE FIRE-BUG AND THE EAST WIND.

E. T. Allen, Forester, Western Forestry and Conservation Association.

'It's time to hit the trail again,'

The careless camper said,
And left his little fire ablaze
Within its leafy bed.

'I'll light another cigaret,'

The idle loafer said,
And chucked his old snipe in the brush
One end still glowing red.

'No, I'll not burn my slash this spring,'

The moss-back logger said,
'I'll trust to God and luck again;
Expense is what I dread.'

'Let's punch the screen out of the stack,'

The donkey fireman said,
And so he did, and all the sparks
Sailed blithely overhead.

'Come on, we'll dump our ashes now,'

The railroad trainmen said,
The train soon fanned them far and wide
As on its way it sped.

'Good time to fire my slashing now,'

The thrifty rancher said,
And touched it off without a thought
Of how far it might spread.

'I'll think I'll blow an hour or two,'

The restless east wind said,
Then liked it so he changed his mind
And blew a week instead.

'Millions in lives and timber lost,'

The newspapers next said.
What made those fires all start at once,
We wondered as we read.

'It wasn't us, it was that wind,'

The fools in chorus said.
So they're alive and loose this year,
—We hope the wind is dead.

DOMINION FORESTRY BRANCH.

Notes of Work and Workers.

The reconnaissance surveys are now nearly all complete and the students in charge are preparing to return to the Universities to complete their course in Forestry. The forest surveyor must be a man of parts for many unforeseen difficulties have to be met and over come in penetrating the tangled tree-growth and brûlé of the muskegs and mountains of Western Canada. Mr. Doucet, in charge of a party near Smoky River, writes: 'A forester needs to be here, besides all other professional titles, a real bushman, an all-man and a jumper.' C. H. Morse, who crossed the outer mountain ranges to explore the hinter lands of the Rockies in Northern Alberta, had great difficulty with the snow in the passes, and on one occasion while returning to camp, the party was caught in a canyon by a blizzard and were forced to spend the night there; an experience one seldom gets the opportunity of repeating.

* * *

Mr. Lionel Stevenson has completed an examination and soil-analysis of the sand lands temporarily reserved on the Saskatchewan prairies by the Dominion Government, and with the exception of the area around Good Spirit Lake, has found them unsuited for agriculture. He also recommends that the strip of rough hill land bordering on the Saskatchewan River be set apart for forestry purposes, as the thin soil and porous gravel subsoil make agriculture impracticable, while if tillage is permitted, erosion will result and navigation be impeded in the river by the formation of bars and islands.

* * *

Owing to the increasing efficiency of the fire protective patrol on the timber areas of the Dominion Government in Western Canada, the fire-loss this year is probably the smallest ever recorded. It is the intention of the Forestry Branch to prepare statistics on forest fire losses in Canada in 1912.

* * *

There are now twenty-seven technically trained foresters in the permanent employ of the Dominion Forestry Branch.

* * *

The Forest Nursery Station at Indian Head has already this season distributed nearly two and three-quarter million trees to prairie farmers, making a total of twenty-three million trees distributed up to date. The demand has so increased that the Forestry Branch found it necessary to establish a branch nursery near Saskatoon which will have seedlings ready for distribution next spring.

FOREST PRODUCTS LABORATORY.

Mr. A. G. McIntyre, who is in charge of the Dominion Government Forest Products Laboratory at McGill University has been visiting the United States Forest Products Laboratory at Madison, Wisconsin. He reports a satisfactory and profitable visit. This laboratory and its subsidiary laboratories were established in 1910 at a large cost, \$100,000 having been spent on work on ground wood problems alone. The two great achievements to the credit of this institution are the adaptation of the sulphate process to the southern pines and in mechanical pulp. Mr. McIntyre is back in Canada and beginning work in his new office.

AFFORESTATION IN BRITAIN.

In an article on 'Afforestation in the United Kingdom' in *Science Progress*, it is shown that only 3,071,047 acres of land in the United Kingdom are in forests or 4 per cent. of the total area, or .07 acre per capita. In only one European country is the percentage as low, namely Portugal, but the area per capita here is larger. Even Holland has 7 per cent. of her area in woodland, while France has 18 per cent., Germany 26 per cent., Russia 37 per cent., and Sweden 48 per cent. Finland leads the European nations with 63 per cent. Thus it is that practically all of the timber used in England must be imported and the imports of hewn and sawn timber in 1909 amounted to 140,000,000.

ANTICOSTI ISLAND.

Henri Menier, the French chocolate manufacturer who died recently, was chiefly known to Canadians because of his purchase of the Island of Anticosti in 1895 for \$125,000. The island which lies in the Gulf of St. Lawrence is 135 miles long and 40 miles wide. Mr. Menier spent large sums of money in developing the island and in recent years a large amount of pulpwood has been produced which has been shipped to Ontario mills.

British Columbia Forest Work.

Bird's Eye View of Conditions in the Pacific Province.

Mr. H. R. MacMillan, Chief Forester of British Columbia writes as follows:—

'Following up your excellent system of securing information from the different forest organizations each month I am sending herewith a short synopsis of our work this last month. You will probably receive information as to different details of our work from other members of our staff, therefore, I shall only refer shortly to general policies.

'I have just returned from a series of meetings which have been held by the Minister of Lands to discuss with the lumbermen and timber owners of the Province an equitable system which might be adopted for the increase of the rates of royalty charged on timber cut from Crown land. It is purposed to increase the rate of royalty as it is believed that the timber now being logged is worth more to the public than the 50c royalty now collected.

'Many different systems of increasing royalty were brought forward by the lumbermen, among them being the grading of the timber and the increase of the rate on the high grades and the collection of the royalty as a percentage of the value of the timber sold. At these meetings opportunity was taken to discuss with the lumbermen the fire protection work of the Forest Branch and arrangements were made to have the timber owners of the Province appoint advisory committees who would work with the Forest Branch in improving and supervising the fire protective work.

'The past fire season has been most successful. The Forest Branch has had at work 415 men in addition to 60 men who are employed by the railroads under the supervision of the Forest Branch. The expenditure for patrol has been over \$200,000, the highest expenses per month being about \$50,000. Arrangements were made for the employment of 100 extra men through the fire season, but owing to the weather it was not necessary to call out this emergency force. Thirty-seven boats were used by the Forest Branch in fire protection this summer.

'Improvement work is being carried on throughout the Province and at the present moment nearly 600 miles of telephone line are under construction and 1,200 miles of trail. Most of this is being paid for from the fire protection fund; in some cases lumbermen are contributing towards the cost of work which is being carried on by the Forest Branch. The most notable fire protection improvement under

construction is the cable telephone line connected with the heavily timbered islands between Vancouver Island and the mainland north of Vancouver in which district is at present the heaviest timber cut in Canada, the output over a small area being about one billion feet per year, also a telephone line which has been constructed to a lookout point on the summit of Mount Baker near Cranbrook; this line reaches an altitude of 7,200 feet and is believed to be the highest telephone point in Canada. From its terminus may be secured a view of an area of over 2,000 square miles in the water-sheds of the Columbia, Kootenay and St. Mary rivers. A lookout will be stationed at this point throughout the fire season and will be able to send to the office of the District Forester at Cranbrook first intimation of any fires occurring in the most valuable timber holdings of the Crows Nest District.

'A complete system of trails and lookout points connected with telephone is being completed in the irrigation districts around the Okanagan Lake; this system will be perfected this fall and should prevent any further fires in the important watersheds in this region.

'Arrangements have recently been made whereby the Forest Branch undertakes the inspection of lands before they are open for settlement in order that timbered and non-agricultural lands may be kept in reserve for forest purposes. About a dozen parties are now in the field engaged at this work. All lapsed timber licenses and leases are examined by the Forest Branch before action is taken towards their disposition and all areas on which there is merchantable timber or which are unfit for agriculture are reserved for forest purposes. Field examinations have recently been made of the watershed of Seymour and Capilano Creeks north of Vancouver, from which Vancouver and surrounding municipalities derive their water, and recommendations have been made that the forested watersheds of these creeks be set apart as forest reserve.

'The fire season which is now about over in the Province has resulted very favorably. There are about 1,800 miles of railroad under construction through timbered land in the Province. Construction was carried on clearing right of way and working in the timber through the summer and although a large number of fires were started they were all extinguished by forest officers before any damage resulted. The total area burned over by fires start-

ing from railroads under construction was less than three square miles, similarly fires resulting from operating railroads were kept under strict control.

There were between ten and eleven thousand permits issued to settlers for the clearing of land; in all cases the areas to be burned over were first inspected by fire wardens and no fires resulted from this cause. The sentiment in British Columbia towards the permit law is extremely favorable and this law has worked out so satisfactorily that it is to be recommended to the other provinces of the Dominion. Between 800 and 900 fires occurred during the past summer, all but 95 were extinguished by the fire wardens without any extra cost; the average cost of extinguishing the 95 for which assistance was required was less than \$50.00 per fire. This small cost of fire fighting is due to the system of patrol employed in all districts where the fire danger was great, to the use of boats on all water ways which enabled wardens to get to fires rapidly, and to the fact that the fire hazard is being constantly decreased through the cleaning up of roads, burning of slash and the making of fire breaks which is being carried on under the direction of the Forest Branch.

The Forest Branch still continues to receive applications for the purchase of small areas of timber; eight parties are now in the field cruising timber for sale. During the past two or three months the dullness of the lumber business has interfered with logging on several of the timber sales and has made it advisable to delay the completion of pending timber sales if the timber is to be sold for its possible market value. The largest transaction now pending is the sale of 500 million feet of timber chiefly hemlock to the British Columbia Sulphite and Fibre Company for the manufacture of chemical pulp, the cutting period on this sale will be between twenty and thirty years and the officers of the Forest Branch are finding it difficult to devise a system of revising the stumpage price periodically in order to protect the Government interests and to be fair to the Company. A very careful examination is being made of the tracts to be cut over in order to render possible the framing of regulations which will protect and encourage the reproduction of the forest. This sale when completed will embody practically all forest regulations and should be of interest in Eastern Canada where sales of pulp timber to companies are frequently taking place.

The Government has recently inaugurated a new policy of handling grazing on public lands by the permit system, the administration of grazing on all unalienated public lands in the Province has been placed in the hands of the Forest Branch.

There are large areas in different portions of the Province where there are almost unlimited possibilities for summer grazing and some possibilities for winter stock in the open. An investigation is now being made of this by the Forest Branch and reports will soon be issued.

Dr. H. N. Whitford has recently arrived in Victoria and will co-operate with the Forest Branch in completing a reconnaissance of the Forest reserves of the Province.

J. M. Swaine, Assistant Dominion Entomologist, has in co-operation with the Forest Branch examined the chief lumbering regions of the Province in order to obtain if possible information of any damage by forest insects. This investigation has resulted in the discovery of serious damage by bark beetles in yellow pine but up to date no other timber of commercial importance has been found to be affected.

All logging operations in British Columbia are carried on under authority from the Forest Branch and in order that forest officers may keep in sufficiently close touch with the work in the different operations, prevent trespass, undue waste and illegal handling of timber, instructions have recently been issued to have all logging operations inspected at least once in three months and reported to the Chief Forester.

THE DANGEROUS CIGARET.

A leading Ottawa lumberman, whose firm has suffered rather heavily from fire in the past season, in speaking to *The Canadian Forestry Journal* called attention to a new danger which threatens not only the timber owner but also the owner of property in towns and cities. This danger is the great increase of the cigaret habit. Our railways are now practically wholly constructed by foreign laborers who are inveterate cigaret users. The cigaret requires much more constant lighting than the old fashioned pipe, and the burning matches are thrown carelessly down wherever the man happens to be with the result that fires get into the slash and from that into the green timber along the line of the railway. An even greater danger arises from the fact that when the man is through with the cigaret he throws the glowing stub down with equal carelessness, and fires start as a result. In towns and cities cigaret smokers throw burning stubs down gratings, over fences or into boxes or barrels. Inflammable material is likely to lie in such places and thus our fire losses in towns as well as in the forest rise to a proportion that is nothing short of criminal.

Reserve Regulations Revised.

More Adequate Provision for Grazing and Fire-Protection.

The new Regulations for Dominion Forest Reserves, which became law in August, 1913, are in some respects much superior to the old regulations of 1906. These latter made no adequate provision for grazing, in fact, it was prohibited except by special permit from the Director of Forestry, and could only be obtained by an actual settler in the vicinity of a Forest Reserve in Manitoba, Saskatchewan or Alberta, and then only for fifty head of cattle. But the new Regulations are framed to encourage grazing rather than discourage it, for, not only settlers, but also ranchers and non-resident land-owners, can now obtain permits from the local forest officer to graze cattle to the full extent of the range capacity of such Reserves, as determined by the Director. The number of head which each cattle-owner is allowed to pasture is determined by the number of applicants for permits and the range capacity of the Reserve, the minimum number being fixed by a 'grazing unit' based on the number of cattle which can be carried through the winter by a homestead or small ranch. The minimum dues for cattle and horses shall be five cents per head per month and the maximum shall be ten cents per head per month, the dues for sheep being one-fourth of those for cattle. As many applications have already been received for grazing

permits, it is likely that the revenues of the Dominion forest reserves will be substantially augmented by this new law.

Quite as important from the standpoint of the forester are the improvements in the regulations regarding fire-protection on Dominion Forest Reserves. Previous laws provided for the maintenance of plowed fire-guards and the clearing of rights-of-way within Reserves, and also for the maintenance of fire-rangers by the railways during the construction of the same, but in the case of railways not subject to the control of the Board of Railway Commissioners, no regulations had been made previous to those of 1913, for the maintenance of fire-patrols by railways in actual operation within Reserves.

These new regulations also requires that all timber-cutting upon the Reserves shall be done under the control of the forest-officers, permittees and existing licensees being required to dispose of tops, of branches and other debris, to prevent, as far as possible, the danger from fires. Lopping of branches and piling of brush is already required of all settlers and others cutting small lots by permit. Whether licensees lumbering large areas within the Reserves, can be induced to take similar precautions against fire is conjectural.—G. E. B.

United States National Conservation Congress.

Washington, Nov. 18-20, 1913.

The Fifth National Conservation Congress has been called to meet in Washington, D.C., Nov. 18-20, 1913. While the Congress will take up the whole subject of conservation, special attention is to be given this year to the subject of forestry. It has been decided that at least two full sessions of the Congress will be devoted to forestry matters. Special committees have been at work since the last Congress under the direction of the Forestry Committee, of which Chief Forester Henry S. Graves is the Chairman, investigating subjects of importance to foresters and lumbermen, and these committees are to make their report at the meeting. The President of the United States is expected to address

the Congress. Members of the Cabinet, Senators and Representatives, the Chiefs of the government bureaus and the representatives of practically every State, will be heard. There will be a number of important social functions, including a reception by the President of the United States. The headquarters will be the New Willard Hotel, Washington, in the assembly halls of which most of the sessions will be held. The President of the Congress is Mr. Chas. Lathrop Pack and the Secretary Mr. Thos. R. Shipp, New Willard Hotel, Washington, D. C., from whom information in regard to railway rates, registration, membership, etc., may be obtained.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

In Northern British Columbia.

H. S. Irwin, District Forester at Prince Rupert, writes:—

'For the last seven months I have been stationed in Prince Rupert, and have been attempting to cover a district over three hundred miles in length with several thousand miles of shore line, by means of a "dinky" motor-boat. There are innumerable small logging outfits scattered along the coast, and this, with the fire patrol, keeps us pretty busy.'

H. C. Kinghorn writes as follows from Hazelton:—

'At present I am holding down the position of Forest Assistant in the Hazelton Forest District,—which takes in all the central part of northern British Columbia. I arrived here the latter part of May, 1913, having been transferred from Fort George, where I spent the previous nine months on reconnaissance and general timber-administration work. Our chief work here so far has been forest fire-protection, — and thanks to the weather conditions and the good generalship of the District Forester, Mr. R. E. Allen, lately District Fire Warden of Revelstoke, the season has been very successful from that standpoint, as fires have been very few and occasioned little expense. We are now working on permanent improvements for a better system of fire-protection, and plan for the construction of several short trails, a telephone line and several cabins for our guards' permanent head-quarters, and for a place in which to keep our fire-fighting equipment. This district is not over-stocked at present with merchantable timber, on account of forest fires having swept over a large area of it, but many places, especially the watersheds are still covered with a good growth of young trees. If our forestry principles are carried out this will be protected for the future welfare of the country. This is an immense country, most of which is still undeveloped, and its real value is still unknown.'

In the Rockies.

W. N. Millar, District Inspector of Dominion Forest Reserves for Alberta, sends a brief note suggestive of the strenuous life of the West. He writes, under date of August 28th, as follows:—'I am at the same old thing—three weeks in the mountains on bacon and beans, and one week of double time in the office, trying to

avert the wrath to come. I leave for my final long field trip of this season in a few days, and will be out for six or seven weeks on the Bow, Clearwater and Brazeau, if three high passes I must cross don't snow up before I get to them. The season has been fairly successful so far. Practically no fires as yet, but very dry weather for the past two weeks, which I am now beginning to get anxious about; it is bound to break in the next two weeks with the annual September big snow, but there may be trouble in the meantime.'

Southern British Columbia.

From Cranbrook, B. C., G. H. Prince writes:—

'In June, 1912 I was assigned to special examination work in the interior of the province, working at Creston, Waldo, Cranbrook and Aspen Grove. In December, 1912, I was appointed Forest Assistant in the Cranbrook District, working with J. D. Gilmour, District Forester. During last winter I examined over one hundred logging operations, travelling a great deal on snowshoes, and enjoyed the work very much. The greater part of this season has been spent in land and timber examinations, trail, telephone and lookout construction, besides a small amount of office work.

I have found the work very interesting and very full of good experience which should prove of great value to me in the future.'

R. H. Campbell, Director of Forestry, recently returned to Ottawa after a trip of inspection in the Western provinces, occupying nearly three months.

A. H. D. Ross, of the Faculty of Forestry, University of Toronto, paid a short visit to Ottawa recently on his return from his summer's work as Consulting Forester of the Canadian Pacific Railway's Department of Natural Resources, most of his time being spent in Calgary. On his return he spent a short time at the United States Forest Service Forest Products Laboratory at Madison, Wis., where research work of much interest is being carried on.

R. B. Miller, professor of forestry at the University of New Brunswick, paid a short visit to Ottawa recently after his season's work with a number of his students in the woods in the Maritime Provinces.

QUEBEC FOREST SERVICE NOTES.

Most of the forest engineers in the employ of the Department are now returning from their field explorations.

Mr. B. Guérin, F.E., has completed the examination of seven townships, making a complete inspection of all the lots which have been sold or patented, and classifying the lands still vacant. This is the first time that the Department of Lands and Forests has inspected the patented lots, as well as those still unpatented, in the endeavor to ascertain with more exactness what is the movement of colonization and the need of more lands to be occupied.

Mr. Geo. Boisvert, F.E., after visiting several townships in the counties of Montmagny and L'Islet, is now completing the exploration of a portion of the upper basin of the River St. John, in the county of Kamouraska, in order to determine the forest value of these tracts and what sections of them should be set aside for colonization purposes. He reports very good forests and a small area of arable land which will allow of the creation of a new parish.

Mr. L. J. D. Marquis, F.E., has spent the summer making an inventory of the basin of the Assemetquagan river, covering over three hundred square miles. Though some sections are burned, the rest consists of a good stand of spruce and

balsam fir of very good size. Mr. Marquis has also done good work in the control of operations of local saw-mill owners and wood-buyers.

Mr. Ernest Menard, F.E., has just arrived from his exploration of the upper basin of the Peribonka, where he has found some good forest land, very suitable for pulp and paper mills.

Mr. Laliberté, F.E., who is working in the upper basin of the Mistassini, which is next to Peribonka, on the northern shore of Lake St. John, will not return till the end of next month. He sends word that the work is going on well and all the members of his party are in good health.

Mr. H. Kieffer, F.E., has completed the inspection of Rolland township, on the Rouge river, and of Robertson township, on the Lièvre river, which were requested by settlers.

Mr. Henri Roy, F.E., after making a brief reconnaissance of the forest conditions in the townships of Remigny, Montreuil, Villars, Beauneville, Caire and Bellecombe, has sent back part of his party and is now on his way to Lake Victoria, whence he will return by the beginning of November.

Messrs. Sicard & Lavoie, Forest Engineers, after having inspected the forest conditions of the upper basins of the Harrieanaw and Bell rivers, are now making a preliminary survey of the Megiskan river.

All these data will be tabulated and some of the reports will eventually be published in bulletin form.

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The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

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Canadian Forestry Journal

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No. 11

TABLE OF CONTENTS: Page 169.

THE FIELD OF WORK.

The following opinions are selected because they seem to signify where the work of the Canadian Forestry Association lies. Some people tell us that the public is enthusiastically and overwhelmingly behind us and that all that is necessary is to bring that public opinion to bear to make governments and corporations do right. The indications are that we have with us a respectable and growing body of public opinion but that the great bulk of the people do not know anything at all about the need of conserving our forests and consequently do not care. It is not a case of hostility but of lack of knowledge.

The great work, therefore, of the Association must be publicity and education. The writers of some of the above letters would have these ends secured by making the Association a government department and providing it with ample funds from the public purse. It would be easier on the officers of the Association to get their funds in a lump grant than to collect them in the form of one dollar bills for membership fees from Atlantic to the Pacific. Some of the letter writers below think the Association is of precious little use (and their candor is valuable in keeping us humble and active) but the best friends of the Association agree that it would be of no use at all if it were a government department. Government departments exist to carry out the orders of departmental heads; independent associations exist to let heads of departments know how the people view their policy and their administration. In that way an association performs a real service

which is appreciated and respected by the elected rulers of the country.

The Association has never adopted the attitude of being perpetually 'agin the government' because it has always found governments open to argument and ready to advance as fast as the people.

In order to perform this function toward governments an association must get the people to express their opinion and no one can express an opinion on a subject he knows nothing about. So we come back to the point that the chief work of the Association is education. There is an immense field before it. It is hampered by conditions. It spends half its time in collecting funds to enable it to spend the other half in propaganda work. It fails to collect enough and so it must do its work badly in comparison with what ought to be done. Still it works on lines strictly in harmony with our British and Canadian institutions, and it is performing a work which no other body, governmental or private, is performing to-day.

The greatest obstacle to the saving and utilization of our forests for the good of the whole community is the lack of knowledge of the people that the forests need saving, or, indeed, are worth saving. We need therefore to rally to the cause leading men and institutions in every community not primarily to strengthen the Association but to show their neighbors that forest conservation is not a fad.

Some Opinions.

From an Insurance Manager.

'Enclosed find the writer's cheque for \$3.00. The matter has been entirely overlooked and I am pleased that you have this tactfully and pointedly called my attention to my remissness. While I have overlooked

my indebtedness I have not been overlooking the splendid work in the country's interest that is being done by the Canadian Forestry Association. Please excuse brevity as I am hurrying to catch a train. Yours for Canada.'

From an M. P. P.

'Have no interest whatever in this question and I desire that my name be effaced from your list.'

From a Merchant.

'Enclosed find \$2. I wish you every success, although have not had the pleasure of attending any of your meetings for some time.'

From a Financial Agent.

'I find on my desk a reminder from you of some overdue fees to the Canadian Forestry Association. I am sure that more than a year ago I sent you notification of my desire to discontinue my membership. I have come to the conclusion that after we have saved the country the big fellows or those with a "a pull" will get it anyway, so what's the use?'

From a Manufacturer of Campers' and Lumbermen's Supplies.

'We acknowledge your favor of the 29th drawing our attention to a membership fee of \$2.00 for the years 1912-13, which has not been paid.

'With reference to same, would advise that we wish our name taken off your membership list, as we cannot see that being a member of the Canadian Forestry Association is of any benefit to us. The work which you are doing is a splendid work, but we do not think it should be subscribed to and carried on by private individuals. Our impression is that it is of sufficient importance to be supported by the Governments of our country.'

From a Lumberman.

'It is with pleasure that I acknowledge receipt of your announcement of the Canadian Forestry Convention to be held in Winnipeg commencing July 7th. I heartily appreciate your kindness and regret that business will not allow of any furlough at this time.

'Being an old resident of Ontario I have had considerable experience in the planting and growth of trees.

'The conservation of our timber lands; the replanting of devastated areas not suitable for cultivation and the planting of trees on the farms and in the towns and cities, especially of the prairie provinces, are propositions that have my warmest sympathy. *Owing to the pressure of other matters it would not be worth while becoming a member of the Association.'*

From one in the Bush.

'In looking over my papers I found this letter which does not appear to have been answered.

'I paid one or two years subscription to the Forestry Association but dropped it because I saw no chance of any good - except to the grafters - coming out of it.

'There is only one way to check the ravages of fire in our woods, and that is to burn the brush.

'This is perfectly feasible if done in the right way, and at the proper time. The result would be to lessen by 90 per cent the damage done by fire. The expense would average \$1.00 per M on lumber board measure, and if the Ontario Government had reduced the fees by that sum 20 years ago, and compelled the licensees to do *clean* work, it would have saved the country an enormous sum.

'I have, by writing to the press and to men in a position to influence the Government, done my best to get something done, but it is useless. Living in the lumber country myself, I am in a position to say that four dollars out of every five paid for fire protection is pure graft.'

THE PATRONAGE EVIL.

The Toronto News in a recent issue had the following editorial on the need of extending civil service reform to the outside service:—

There is reason to think that the Borden Government is moving towards reorganization of the departments. There is urgent need to relieve Ministers of many petty and vexatious duties. Still there are grave defects in the classification of the inside service. The abler officials are underpaid. Many persons in the service, appointed only for political reasons, are filling places to which they are unequal. The lack of a system of superannuation embarrasses Ministers and heads of departments in dealing with crowded pay rolls and inefficient officers. In the outside service radical reform is necessary to ensure justice to public servants and efficient management of the public business.

It is not true that devotion to public affairs must necessarily be stimulated by office and emoluments. The civil servant is entitled to the same security of employment the same chance of promotion, the same reward for industry and efficiency as the rest of us enjoy in our various pursuits. This he cannot have while the public offices are treated as the spoil of party and the high places of the service are reserved for untrained politicians who must be fitted for their duties by the very men whom they supplant. At best the area of patronage can only be restricted, for judicial appointments, the appointments to public commissions,

to lieutenant-governorships, and to various other places of great trust and dignity can be made only by Government and in these political considerations will always be more or less influential. But it is seldom that scandal arises out of this class of appointments. It is not here that the chief evils of patronage exist. They lie in general partisan control of the outside service, in the activity of patronage committees, in the management of party caucuses and party conventions by the office hunting element.

It is true that all the evils of our politics will not be eradicated by the establishment of a permanent, non-partisan civil service

and the disappearance of patronage as a stimulus to political activity. But there would be a great increase of independent action in the constituencies. Public men would be relieved from dependence upon the mercenary element which now exercises a baneful authority in the political organizations. The civil service would be greatly strengthened in character and efficiency. The independence of Parliament would be materially enhanced, and the great and serious problems of administration and high political debate upon broad questions of policy and principle would become the chief business of statesmen.

Ontario Forests

Extracts from the Report of the Minister of Lands Forests and Mines.

The importance of the forests of Ontario to the welfare of the Province and the Dominion are brought out in a few figures in the report of Hon. W. H. Hearst, Minister of Lands, Forests and Mines, for 1912, which has recently been issued.

'The revenue collected on account of woods and forests in 1912 was \$1,985,662.78, or \$274,225.91 in excess of the revenue collected last year (1911).'

'The principal increases were in timber dues \$166,673.37, and in bonus \$113,884.14.

'The mileage under license last year was 996 miles less than that of the previous year. The reason for this was that certain licensees had not paid up their ground rent or were indebted for dues, which prevented the issue of their licenses. 307 miles were also surrendered as having been cut out, and were with drawn from license.

'The output of pine sawlogs, boom timber and square timber brought into feet board measure equalled 487,838,666 feet board measure, which is 96,425,439 feet below the output of 1911.

'The output of timber other than pine showed an increase of 24,093,160 feet over last year. There was also an increase in the pulpwood of 49,612 cords. The most notable expansion was in railway ties. The quantity taken out last year was 4,270,832 ties. The quantity taken out this year was 5,704,459 ties, showing an increased output for the year of 1,433,627 ties.

'Several berths in the Rainy River, Thunder Bay and Kenora Districts that had been damaged by fire or cut over in previous years were sold by tender.

'The only other timber sale held during the year was of two berths on the Jocko River, each having an area of 25 miles, which were in a dangerous position and on which the timber had reached its maturity, and it was considered wise to sell them so as

to get the value of the timber. The sale of this timber established a record for price. The pine timber on Berth No. 1 was sold for \$13.26 per thousand feet board measure in addition to \$2 dues; and the pine timber on Berth No. 2 was sold for \$12.10 per thousand feet board measure in addition to \$2 dues. In the disposal of these berths it was determined to insert a condition in the terms of sale requiring the licensees to remove all limbs, brush, and other debris arising from the lumbering operations under the direction of an officer appointed by the Department of Lands, Forests and Mines. A deposit was required of \$1,000 per mile in each case, which deposit is held as security for the performance of all conditions of sale. The Forester for the Province, Professor Zavitz, was requested to visit the locality, and a special ranger was placed in charge of the cutting to see that the conditions with respect to the disposal of the debris were carried out. The timber will be culled and measured by scalers appointed by the Department.'

'There were on duty last summer (1912) in forest reserves 228 fire rangers; on railways 193; on lands of the Crown 111; which with 10 chiefs makes a total of 542 fire rangers employed.

'The timber licensees are required to place rangers on their limits and pay them. Under this arrangement there were on duty on licensed lands during the summer 350 rangers and 8 supervisors, making a total staff in the forest last summer of 900.'

Among the cost figures given are: wood ranging \$91,753; exploration of timber berths \$1,062; fire ranging \$124,483; forest reserves protection \$83,605. These figures make a total of \$300,903 for this part of the work in Ontario in 1912, and of course they do not include the amounts paid by the timber licensees for their 350 rangers.

New York State Forestry Association

By Mr. F. F. Moon, Professor of Forestry Engineering N. Y. State College of Forestry.

A highly successful meeting of the New York State Forestry Association was held at the New York Botanical Garden on October 17.

The regular program was somewhat curtailed on account of the absence of Mr. Pettis so that the State-wide Fire Law was not discussed nor was the Jones Bill taken up to any extent. Professor Mulford of the Department of Forestry, Cornell University gave an interesting talk on the possibilities of the Farm Woodlot. In the discussion that followed it was brought up that co-operative marketing is in many cases as important as Community production and efforts should be made that will enable the small wood-lot owner to market limited quantities of his products at the prevailing market price instead of letting them go at cut rates.

The question of a forest inventory of New York State was discussed by Professor Moon of the New York State College of Forestry. It was stated that New York State while previously a large producer of timber has at the present time slipped back to 23rd

in the list of the States in timber production in spite of the fact that it has enormous areas of natural forest land. New York State consumes more lumber viz. one and three-fourths billion board feet and more pulp viz. over one million cords per annum than any other State in the Union but out of the total annual lumber bill of \$54,000,000, approximately \$20,000,000 are sent outside of the State each year to purchase raw material.

The report soon to be issued by the New York State College of Forestry in connection with the United States Forest Service on the Wood Utilizing Industries of New York State indicates that the Empire State has 14,000,000 acres better suited to the growing of timber than agricultural purposes. This enormous acreage should be made to yield a revenue instead of lying absolutely idle or at best producing but a fraction of its capacity.

It was tentatively decided to hold the January meeting in Albany and plans for a vigorous campaign to increase the membership were made.

USES OF SAWDUST.

Flour for trade purposes from sawdust is now in common use. It is an ingredient of dynamite, linoleum, xylolite, etc. The wood flour is ground in a mill, very similar to those which grind corn and rye. Pine and spruce sawdust is used, and after being passed through the stones and the bolting chest, it is sacked or baled for shipment. It is then worth 48s. to 52s. a ton. The flour has a number of uses. It is the absorbent for nitroglycerine, which is the explosive ingredient. Wood-flour dynamite is inferior to that made with infusorial earth as the absorbent; but it serves many purposes and is cheaper. But dynamite is one of the smallest prospective uses for the product. Linoleum makers mix it with linseed oil and give body to their floor coverings. It is not considered quite equal to ground cork for this purpose, as it is

less elastic, but it is cheaper and meets requirements for medium grades. The flour fills an important place in the manufacture of xylolite, a kind of artificial flooring, resembling wood in weight, and stone in other respects. It is used for kitchen floors, and in halls, corridors, cafes, restaurants and public rooms. It is impervious to water, and is practically fireproof. It is used as floor material in some of the German war vessels. It is so used because it is not liable to take fire or splinter if struck by shells.

Many owners of woodlands in Massachusetts, in addition to making a careful selection of trees to be cut, are replanting in every case where their lands are not sufficiently wooded, and many areas that for a century perhaps have been what are known as run-down pasture lands are being planted with suitable trees, either pines, maples or other woods that are best adapted to peculiar local conditions.

Dominion Forestry Branch Work

The Director of Forestry, now has a permanent staff of thirty-eight in the head office of the Forestry Branch at Ottawa. Eight of these are technically trained foresters engaged either in administrative work or in the preparation of Branch bulletins. Now that the fire season has come to a close, the tedious work of checking fire-rangers' diaries is practically over. Fortunately many of the rangers possess the gift of brevity to a remarkable degree as well as considerable versatility in phraseology, which makes even their diaries interesting in places. One ranger, evidently Irish, reports having 'camped on an island with twenty other Indians.' In another place he 'broke camp at God's Lake in the morning and made Hell's Gate by night.'

The Reserves being actively administered by the Forestry Branch have had a most successful year. On the sixteen Reserves in the four western provinces, from which complete returns have come in for the fire season from April to September, inclusive, the area burnt over this year amounted to only .06 per cent. of the total area. The mature timber burnt covered hardly fifty acres, or approximately .0002 per cent. of the total area of these Reserves, the loss being but a few hundred dollars. The chief loss was the partial destruction of about 2,700 acres of young timber, which was, however, potentially valuable. A great part of the area burnt on these Reserves consisted of grass lands around the shores of sloughs, or natural meadows, settlers and campers being responsible for most of the fires. That these fires were, in the great majority of cases, extinguished before reaching the timber and that too, with a total extra cost of little over \$200.00, reflects great credit on the administration of these Reserves.

The fire-record in the Fire Districts outside the Reserves, has been even more remarkable, for there the Fire Rangers are not aided in the fighting of fire by trail, telephone line, lookout station, or fire-guard. There are eleven of these Districts each in charge of a chief Fire Ranger and it is to the initiative of these men that much of the season's success is due, the total estimated damage done to merchantable timber by the several hundred fires reported being less than \$1,000. Co-operation in fire-protection has been secured from the campers, packers and Indians, to whose carelessness with camp-fires many of the fires of other years were due. The Chief Ranger in northern Mani-

toba was recently at Norway House when treaty money was being paid to between 800 and 900 Indians. He writes: 'The Chief and councillors assured me that they stood firm for the protection of the timber.' The fire rangers in this district, many of whom are Indians, average 16½ miles, by canoe, each day rain or shine, not excluding Sunday. That patrol work alone can be made effectual when conscientiously performed, is shown from the fact that in the Coast Fir Ranging District, in British Columbia of the 124 potential forest fires occurring in the period from April to August, only one exceeded ten acres in extent before being extinguished by the Rangers, who, in only four cases, had to call in extra assistance.

Of the eight forest survey parties doing reconnaissance work in western Canada this Summer, all but two have completed their work, as a result of which it is not unlikely that substantial additions will be made next year to the areas now included in Dominion Forest Reserves.

Mr. Melrose examined approximately 1,800 square miles of forested land situated north of Battleford, and consisting principally of low sand and gravel ridges with numerous sloughs which towards the north gave place to muskeg. The poplar type covered 40 per cent. of the area giving place to white spruce on the better drained soils, spruce being the ultimate type. Few of the trees have attained full growth for almost the entire area has been burnt over in the last 75 years and on over 100 square miles, as a result of repeated fires, tree-growth has been entirely wiped out.

Mr. Connell, who had charge of a party in the Pasquia Hill region north of the Porcupine Reserve in eastern Saskatchewan, examined over three thousand square miles of country most of which was hilly and covered with boulder-clay (consisting mostly of boulders), making it unfitted for agriculture but very suitable for forestry purposes. There are some fine stands of poplar and spruce although fire had done great damage here, too.

Mr. Roberts, in charge of a party operating northwest of Prince Albert, examined about eighteen hundred square miles of hilly or rolling sand-lands containing the head-waters of several large rivers flowing towards Hudson Bay. The growth is mostly young poplar and spruce which, if protected from fire, will soon be providing timber to the settlers in that region. G.E.B.

A Forest Insect Survey in British Columbia.

By Mr. J. M. Swaine, Assistant Entomologist for Forest Insects, Dept. of Agriculture, Ottawa.

The Forest Branch of British Columbia and the Division of Entomology of the Dominion Department of Agriculture working in co-operation have this summer commenced a Forest Insect Survey of the timber limits of British Columbia.

The investigation was made by Mr. J. M. Swaine, Assistant Entomologist for Forest Insects in the Division of Entomology, Ottawa. This Summer's work was primarily a survey to determine the location and extent of forest insect injuries and to decide upon proper control measures for the more serious outbreaks. The territory covered included the Kootenay, Okanagan, Similkameen, Lower Coast and Vancouver Island regions. Several destructive outbreaks of bark-beetles were located and studied, and much practical information was obtained for future control work with a variety of forest insects. A large collection of forest insects and their work was made, which will be of great practical and scientific value.

Much work remains to be done. Information was obtained of several extensive bodies of dying timber which could not be visited this season.

■ The timber of the Lower Coast and Vancouver Island is not at present suffering from extensive insect outbreaks; but there are incipient attacks which need to be kept under careful observation. Cedar and yellow cypress are quite generally hollow-hearted and stag-headed. These affections are probably always of a fungous origin. No serious insect injury to these trees was found in this Summer's work. In many places the western white pine, *Pinus monticola* is being killed by the mountain pine bark beetle, *Dendroctonus monticolae* Hopk. It was found killing green timber, particularly at Cowitchan Lake and the district about Campbell River. Wherever valuable stands of white pine are held a watch should be kept for attacks by this destructive beetle. Clumps of 'red tops' and scattered 'red' and 'yellow tops' with the bark bearing numerous tubes of gum surmounting vertical tunnels between the bark and the wood, are danger signals, and should receive prompt attention if the timber is to be saved.

The Sitka spruce, *Picea sitchensis* is subject to attack by a destructive bark beetle, *Dendroctonus* sp. near Menzies' Bay this beetle had bored in fire-injured trees about a burn and was this Summer attacking and killing nearby green timber of large size.

The spruce gall insects of the genus *Chermes* are commonly found on the Sitka spruce, and are seriously destructive to

isolated trees or clumps, particularly in lawns and parks of towns and cities. Stanley Park at Vancouver is suffering from a serious outbreak of these pests.

The balsam fir *Abies grandis* is attacked and killed by two species of bark beetle, *Hylugops* sp. and *Eccoptogaster* sp. This injury was more noticeable at Alberni and about Campbell River.

The Douglas fir, which forms the bulk of the timber of the region, is generally in fine condition. Several incipient outbreaks of the Douglas fir bark beetle, *Dendroctonus pseudotsugae*, should be kept under observation, but we know of no considerable body of dying timber. At Cowitchan Lake and Campbell River isolated red top fir had been killed by this species, and it is everywhere abundant in slash and dying trees.

The spruce budworm, which was very abundant in many places a few years ago, is now hardly to be noticed.

Ambrosia beetles of the genus *Gnathotrichus* and *Trypodendron* are excessively abundant in dying trees. Their small black tunnels pierce the sap wood, but rarely penetrate more than five inches. The most injurious of the Ambrosia beetles belongs to the genus *Platypus* of the family *Platypodidae*. It is very abundant throughout the Lower Coast and Island districts in freshly cut logs of Douglas fir, hemlock, spruce and balsam, and drives its tunnels seven inches and over into the wood.

The lower part of the Interior, from the railway belt south to the boundary, harbours a large number of destructive forest insects. The bull pine, western white pine, or mountain pine, lodgepole pine, Engelmann's spruce, western larch and Douglas fir are seriously affected by destructive pests.

The bull pine is subject to attack throughout its range in British Columbia by three destructive bark beetles.

The western pine bark beetle, *Dendroctonus brevicornis* Lec. is particularly destructive. The mountain pine bark beetle is almost as serious an enemy to the bull pine as to the white pine from which it receives its name; The red turpentine bark beetle, *Dendroctonus valens* Lec., is also abundant about the base of green pines attacked by the two more destructive species just mentioned. Serious injury by these species is evident in many places but the most destructive outbreak appears to be about Princeton. The clumps of red-tops, containing from five to thirty-five trees have already become very numerous, although the dying trees have

only been noticed two years. These red-tops are, of course, dead trees, the majority of which were killed last season. In the surrounding green trees many trunks were studded with the pitch-tubes of the borers which had left the red tops to attack the green timber. From 1500 to 2000 pairs of beetles were working in the lower fifty feet of attacked trees examined. These trees will add greatly to the size of the red top patches by next Spring. Hundreds of trees have already been killed and the fine timber in the valley of the Simalkameen and Tulameen Rivers, is threatened with widespread destruction. Similar outbreaks, as yet of lesser importance, are starting in several parts of the bull pine country.

The western white pine is seriously affected by the mountain pine bark beetle. An outbreak has been running in the Sugar Lake and Mable Lake regions for about eight years and a large body of fine timber has been killed. The killed trees have since been rendered valueless by the tunnelling of the larger wood borers. At the time of the visit there in July the beetles were leaving the red tops, attacked last season, and entering the green timber in large numbers. The same species was killing lodgepole pine in that district. Unless control measures are undertaken very soon the white pine of Sugar Lake will be very largely killed.

There are outbreaks by destructive bark beetles in Douglas fir and lodgepole pine. The Douglas fir bark beetle is killing a moderate amount of fir in the Creighton Valley. Lodgepole pine is subject to attack by bark beetles, which in many places kill more or less timber. The most serious outbreak known to us at present is in the Shookumchuck valley above Wasa.

Considerable injury to reproduction was located. The most serious cases were attacks on cones of Douglas fir and bull pine by caterpillars. A small species feeds largely within the seeds of bull pine cones, leaving them entirely filled with powder-like excrement. A large species feeds irregularly cutting tunnels around the green cones destroying many of the seeds. Such injury was found at various places in the Interior and also to Douglas fir on Vancouver Island.

The control of the destructive bark beetles is discussed at length in the Report on the Summer's work shortly to be published. The most important control measure is to fell and bark the recently infested trees and in certain cases to burn the bark. The methods to be followed in each case depend upon the habits of the beetles concerned, and should be conducted according to the advice of a forest entomologist.

It is a mistake to strip the woods off from steep land and then plow it. Better by far keep timber growing on it. It is worth far more for forest culture than for cultivation.—*Farm Journal*.

FORESTRY IN QUEBEC.

The Secretary recently visited the City of Quebec and later on other parts of the province and there learned that forestry is making steady progress.

The policy of township forest reserves to which reference was made in the September issue of the Journal is becoming constantly better understood, and this promises to soon become an important feature of the work. One of its most valuable aspects is the interest which it arouses in the people of the township and their determination to protect and improve their own property. Anything which gives the people of the country a direct knowledge of and interest in forestry is one of the most valuable aids to forestry progress, and the effect of this system of township reserves will soon be perceived far beyond the borders of the community in which they are situated.

The method of dealing with sand lands in old settled parts of the province is proving its value. In case any of our readers have forgotten how this is done it may be explained that Quebec has adopted what has been termed the 'Massachusetts system' of dealing with those lands in settled communities which are fitted only to produce forest trees. By this system the province pays a nominal price of \$1 per acre for all the lands in a given district which it is intended to reforest. The Provincial Forester then examines the tract, decides what trees it is advisable to plant, and arranges for their planting. The plant material is supplied by the provincial nursery and the government pays the cost of the work. The care and necessary cultivation of the plantation devolves upon the government for fifteen years from the time of purchase, at the end of which time the original owner may regain possession of his lands upon payment of the cost of planting and cultivation. In order, however, that the owner will have a definite basis, it is agreed that no matter what the cost has been to the government, the re-purchase price by the original owner will not exceed \$10. per acre.

This is not a compulsory law, but so far there has been no difficulty in securing lands to be planted under these conditions. In fact at present the Department cannot begin to overtake the work that is offered in different parts of the province.

There seems likely to be a development of this line of very great promise, which is the acquirement by municipal organizations, particularly by towns and cities of the complete areas of these sand portions and the maintenance of these as municipal forests. This could be done by one of several methods. For instance, the city might purchase the land outright from its present owner, and then turn it over to the government for the fifteen year period; or it could act under the advice of the Forestry Department, do its own

planting, and receive the profits from the same as soon as the thinning process began. In any event in order to secure continuity and uniformity the government would probably regulate the general direction of the management and cutting of the timber.

PROF. RECKNAGEL'S BOOK.

A book which has merited notice long ere now but of which a review has been delayed is *'The Theory and Practice of Working Plans'* by Professor A. B. Recknagel, of the Forestry Faculty of Cornell University—New York, John Wiley & Sons; Montreal, Renouf Publishing Co., \$2 net.

The author, who is a graduate of Yale Forest School, has been in important positions in the U. S. Forest Service and has lately spent a year in Germany, studying at first hand the systems of forest organization in that country, is by his experience specially fitted to deal with the complicated subject.

The presentation of the theme is logical and clear. Following his title faithfully, the author takes up first the theory of management under 'Foundations of Working Plans,' and follows it with 'Practice of Working Plans'. In Part I, after discussing the ideal of the forester, the 'Normal Forest', Professor Recknagel describes methods of forest reconnaissance which would lead to the first essential in any proper forest management, viz., that the manager should know accurately what he has within the boundaries of his tract. In this connection some very interesting tables and plots are shown.

Having arrived at a trustworthy estimate of his forest, the forester's next step is to determine the system under which he will manage it. The next portion of the treatise is therefore given to a consideration of the three conditions governing all systems of management, viz., the unit of organization, the silvicultural method of management, and the final object of management.

The statement of the principles of the various methods (some twenty in all) which have been worked out in Europe is most lucid, and will be a delight to the American student of forestry, to whom, on account of the difficulties of foreign texts, many of the leading points of continental practice have been denied.

Realizing that American forests are in very poor condition for management to-day Professor Recknagel next speaks of the regulation of yield in special cases. He then presents the working plan document, which contains the various plans which will have to be followed in the course of the regulation, and whose keynotes, says the author, are simplicity and brevity, and may embody merely the silvicultural management, or may cover all the activities in a forest. In the 'Outline of American Practice' which he suggests,

the author follows this latter plan, and embodies all the uses to which the forest may be put in addition to lumber and by-products.

From his wealth of reading and European experience Professor Recknagel is able to present in the latter portion of the book, 'The Practice of Working Plans' a most complete synopsis of the state of management plans in Prussia, Bavaria, Saxony, Wurttemberg, France and Austria. These pages bring home to the reader the practical advantages and disadvantages of the plans outlined in the theoretical discussions.

Passing to American conditions the author describes the work of the United States Forest Service in the development of the basis of working plans. The reproduction in the book of many of the forms used in reconnaissance gives the reader a clear conception of the actual operations of today.

All in all, the book should prove of great value to the student and practising forester for whom Professor Recknagel says he has written. In itself through the appreciation which will doubtless be accorded it by American foresters it should do much to dissipate the fear expressed by the author in the preface that the application of the most advanced methods of management 'is of the far distant future, if ever.'

R. L. C.

C. P. R. FORESTRY WORK.

Mr. A. H. D. Ross, M. A., M. F., Lecturer in Forestry in the University of Toronto, and Consulting Forester for the Canadian Pacific Railway, reports a most interesting Summer's work.

During the last two years the Company has had reconnaissance parties at work from Vancouver to Halifax, and now has on file much valuable information regarding the timber resources of the country tributary to its lines which could not be obtained from the provincial authorities. It is hoped that the good example set by the C. P. R., under the energetic leadership of Mr. R. D. Prettie, Superintendent of Forestry for the Company with headquarters at Calgary, will spur others on to a systematic method of stock-taking and a study of the best methods of making provision for future supplies of timber.

In southern British Columbia, the Company has twelve tie-and-timber reserves aggregating over half a million acres, and during the past summer had made detailed reconnaissance surveys of more than half the area at a cost of less than ten cents per acre. The character of the work done equals the best done anywhere on the continent and has been highly commented upon by some of the leading foresters of the U. S. Forest Service.

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CONTENTS:

Page.

Editorial	161, 162
Patronage Evil	162
Ontario Forests	163
N. Y. State Forestry Association	164
Dominion Forestry Branch	165
Forest Insects in British Columbia	166
Forestry in Quebec	167
Prof. Recknagel's Book	168
C. P. R. Forestry Work	168
Notes	169
Commercial Forestry—Mr. Ellwood Wilson	170
Slash Disposal	171
Western Farmers and Trees	172
With the Forest Engineers	173
Development in British Columbia	174

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Montreal.

REPORTS OF WINNIPEG MEETING.

Copies of the detailed Report of the Winnipeg Convention were mailed to all our members over a month ago. Those who have not received their copies should notify the Secretary as soon as possible as there is a large demand for this Report and copies are going rapidly.

CHANGE OF ADDRESS.

Since the *Canadian Forestry Journal* is now issued monthly our mailing lists are revised with like frequency. Members who have changed their addresses, or who do not receive the *Journal* regularly and promptly are requested to write to the Secretary. Do this now before you forget it.

THE BROILLIARD MONUMENT.

At the 1913 Annual Meeting of the Canadian Forestry Association the sum of \$25. was voted toward the monument to Broilliard the eminent French forest engineer. The Secretary is in receipt of a letter from the President and Secretary of the Committee announcing the inauguration of the monument at Morey (Haute-Saône) France on Oct. 1. The function was carried out on a large scale and in a manner worthy of the man and the profession.

TO PROTECT OTTAWA'S WATER SUPPLY.

In connection with the decision of the City of Ottawa to take its water supply from Thirty-One Mile Lake in the Gatineau country lying north of Ottawa in Quebec, the character of the watershed becomes of importance. The report of Sir Alexander Binnie the consulting engineer on the possibility of the water being contaminated in the future shows that the whole drainage basin is well wooded, not more than three per cent being cleared and the total population does not exceed one per square mile. With the selection of this scheme out of several proposed the necessity for the creation of a park on this drainage basin becomes apparent. The land is not suitable for agriculture. It is necessary that settlements be kept away from it if Ottawa's water supply is to be kept pure, so that here is the best reason for the establishment of a permanent forest. The matter should be taken in hand at once and go on with the development of the water works project.

Commercial Forestry

Synopsis of Address by Mr. Ellwood Wilson, Forester of the Laurentide Paper Company before the Society for the Protection of New Hampshire Forests.

All large industries Mr. Wilson said, were accustomed to look at the financial side, and the chief question the forester was asked was 'Will it pay'? Paper manufacturers had till within the last few years paid little attention to forestry but had regarded the woods more as mines than as agricultural holdings. Up till a few years ago no manufacturer would use anything but spruce, but now in some districts they were using practically as much balsam fir as spruce.

Mr. Wilson pointed out that the conditions were so different in America from those in Europe that it was impossible to apply here methods used there. On this continent the large paper companies either owned their holdings outright or leased them for long terms from the government, and the first question which every forester was asked was how long would the present supply last. In some cases this was a very difficult question to answer by making an inventory because there were no maps and no information as to the exact size of the holdings, which ran all the way from one million to four million acres. There was then, of course, the necessity of overcoming the antagonism of the old ideas as to forest utilization, but the constant trend of affairs had convinced the holders of the necessity of knowing about the supply for the future.

Another point that had held back the forestry movement among these concerns was the fear that some other material than wood might be used to make paper, or that some other country like Japan or India might make paper from some quick growing wood like bamboo. However, after considering these things Mr. Wilson felt that wood would continue to be used for a long time to come, and that it would pay to operate the forests on that expectation.

There were two types of men managing companies. One looked only to the earning of as large dividends as possible without much regard to the future; while the other one saw his work as a part of a broad scheme, and who was willing to look ahead and plan for the future. He was happy to say that in the paper industry this latter type was often found, and that paper companies especially in Canada had to a great extent urged governments to do their duty in regard to the forests.

Mr. Wilson pointed out that they had now by an inventory of a good part of the woodlands in Quebec, come to the conclusion that

the supply available by the streams and present means of transportation was good for fifty or sixty years more. His hearers might say that forests grow, but Dr. Fernow had just told them that there was no increase in the amount of timber in a virgin forest as the decay and death of trees balanced the new growth.

He was positive after his experiments in this matter that there was only one way to handle this question, and that was to begin to plant on a large scale. Mr. Wilson on this point said, 'I am quite sure that the financial return will be adequate, and when you think of the huge cost of these plants which must be situated where water power is cheap, where there is an easy way to get the wood out of the forests, namely by floating it on the rivers, and that it is necessary to provide them with raw material, it seems that their dependence on wood, their interest will soon bring them to this conclusion and that they will soon begin to plant on a large scale.'

The company by which he was employed used one and one half million trees per year. They had been for four years experimenting with species which grow quicker than our native ones, and while it was too soon to say what the results would be, still he hoped that in a few more years they would have begun to plant as many trees as they cut. His hearers might say that it took a long time to grow trees, but he did not think the time element would play such a very important part in this question, because these immense plants, owned by large and self-perpetuating corporations which would endure as long as other human institutions, should go on practically in perpetuity. And planting even without considering the sure rise in the value of timber would give a proper financial return. They had now planted nearly 100 acres and found that it could be done as low as five or six dollars per acre. Of course they did not know as yet whether the native species would do as well in pure stands as they did when growing naturally mixed in the woods. They were also trying plantations of different kinds of trees in pure and mixed stands and on different soils. He felt that when the forester learned the practical bearing of his work and when he could show the lumberman and the paper manufacturer that there were actual returns in dollars and cents from forestry then the field would be enormously increased.

The great question of fire protection was the first one to be met and that had practically been settled in the Province of Quebec by the formation of the pioneer co-operative society, the St. Maurice Valley Forest Protective Association, and the broad-minded and helpful attitude of the Minister of Crown Lands, Hon. Jules Allard, and his Chief of Fire Protective Service Mr. W. C. J. Hall. This Association had charge of over seven million acres and had two successful years behind it.

Canada was well placed in regard to care of her forests. These for the most part were still Crown Lands, the right to cut the timber being licensed to companies and individuals, and the cutting carried on under the supervision of the government. The immensity of the territory, the lack of trained men and the difficulty of dealing with settlers had hampered the work. A new era was dawning, however, and the Dominion Forest Service and those of the provinces of Quebec and British Columbia were doing splendid service. It was hoped there would be no backward steps and that the government would take the lead in conserving the forests and looking after fire protection. At present in Quebec the licensee paid not only the annual rental and stumpage dues, but bore all the expense of fire protection, stock taking and measurement.

Another interesting question was the amount of growth after lumbering. It had been found over large areas that the average cut per acre counting all territory good and bad was about 3 cords or 6M feet b.m. per acre. The government regulations did not allow the cutting of any trees under certain diameter limits. The result was the smaller trees had been left under the supposition that they would supply the seed necessary for natural regeneration. But measurements in many different sections showed that not enough timber was coming on to make a second trip into this cut-over section profitable. A second cut would amount to only one, or at the very most two cords per acre after thirty or thirty-five years, so that from the standpoint of the future crop the diameter limit and natural reproduction were not efficient. Another drawback was that under this system only soft woods which could be floated were taken out, leaving the large hardwoods which were really weeds, to grow and propagate. For this reason planting was a necessity and should be begun at once. Mr. Wilson concluded, I think that the only method of perpetuating a sufficient supply of timber, and I agree with Dr. Fernow that the government is the agency which should take it up'.

SLASH DISPOSAL.

At the Winnipeg Convention the question of slash disposal was keen-

ly debated. Mr. W. R. Turnbull of Rothesay, N.B., an old and enthusiastic member of the Association was prevented from attending at Winnipeg, but felt so strongly on this subject that he sent the subjoined letter giving his views:—

According to a recent bulletin of the Canadian Forestry Association 'Canadians are cutting timber each year at the rate of about 100 board feet per acre.' 'The fire loss is estimated to be 950 board feet per acre per annum.' In other words nearly ten times as much timber is destroyed by fire as accrues to the benefit of the country.

I have been in the New Brunswick woods a good deal and I believe this enormous loss can be prevented in **just one way** and that is by compelling the lumbermen by law to burn the tops and all the branches of every tree that is cut down, and **at the time** the tree is cut down. The practical lumberman will doubtless object to this, saying that the green branches will not readily burn, and that it would cost too much money to employ men to do this work.

In the first place the green branches and tops **will** burn, provided a large fire of dry wood is first started, and the green branches gradually fed on the fire and kept well packed down by attendants that understand the proper methods. In the second place it would cost money, no doubt, but the lumberman could be compelled by law to expend this money and the resulting saving would accrue not only to the country as a whole, but eventually to the lumberman himself.

I would propose that at every lumber camp in Canada, a government employee be stationed, during the cutting months, to see that the law of burning tops and branches at once, be carried out. Or what would suffice as well, and be less costly to the Government, would be travelling inspectors who could possibly visit twenty or thirty camps in a given district and report at once the negligence of any lumberman who had not destroyed his tops and branches—the negligent lumberman to pay a heavy fine, many times the cost of doing the work of burning.

If such a law was made and enforced large forest fires would soon be things of the past. In woods that have been **cleaned** of dead wood and old cuttings, and contain little but living green trees it is almost impossible to start a fire in any month of the year, and the country would lose little by hunters and careless campers if the lumberman were compelled to do his duty by the country and by himself.

WHY EVERY WESTERN FARMER SHOULD GROW TREES.

By Mr. J. J. Ring, Crystal City, Man.

Protection is one of Nature's first laws, and seems to be the first law of nations. Then, why not protect our homes by planting trees for windbreaks and shelter belts. They add to the comfort of the home by providing surroundings of a restful and beautiful character.

We can not over-estimate the value of tree planting in the prairie provinces. The economic value of the shelter belts cannot be expressed in dollars. For many reasons, an ample, properly located windbreak should be grown around the farm home. Its protecting arms embrace the dwelling house, and the barns, stables and sheds. The strong, hardy, beautiful trees are set for defense, and when the winter blizzards come charging across the prairies and find the farm home intrenched behind a living rampart of trees, the fierce breath is robbed of power to worry and destroy. The wind rolls over; the snow is held back in the lee of the shelter belts; the farm-yards are free of snow banks. Who can put a money value on the shelter belts?

If possible they are of more value in the summer. When the dry, blighting hot winds, and the fierce cutting sandstorms attack our homes, we are comparatively safe behind the invincible, swaying home-guard of trees. Can a price be put on the comfort and enjoyment our families and friends receive from the cool refreshing shade and shelter of trees?

The farm animals, poultry and our wild birds enjoy the protection. We find from long experience that we can raise better and finer flavored garden vegetables in the shelter than in the open. To get the best results from small fruits, flowers and shrubs, we must have shelter.

TREE PLANTING IN NORWAY.

The western coast of Norway was heavily wooded a few centuries ago, but now this coast strip has become bleak and desolate with the passing of those forests. To restore the forest glories of the west coast the Bergen Tree-Planting Society was founded in 1900. It has set itself a tremendous task demanding vast expenditures of money, time and labor but, nothing daunted, the society has enlisted the aid of the Government and wealthy citizens and has already made substantial progress. In the thirteen years of work carried on this society has planted nearly 37,000,000 trees, two-thirds of them on a tract of 10,000 acres in the two Bergenhus counties. Stimulated by such an example 144 smaller societies have been organized in these counties, and last year they set out 2,276,00 trees.

THE UNTHINKING MATCH.

A match doesn't think with its head. When you use it, your head has to do all the thinking. Don't trust the match to fall where it cannot start a fire and thus make you responsible. The progeny of matches—cigarette or cigar stubs and camp fires—have no heads at all. Do not trust them, either. Do the thinking. Put them out.

RAILWAYS AND FORESTS.

Every acre of forest land in North Carolina is worth more to the railroads for the timber value than the people who own the land. The railroads get more from hauling the timber than the man who owns the timber receives from selling it. . . . The railroads try harder to prevent forest fires than the people do.—Mr. B. E. Rice of the Norfolk Southern Railway at North Carolina Forestry Conference.

REVENUE FROM FORESTS IN U. S.

Receipts from the national forests of the United States were nearly \$2,500,000 for the year ending June 30, 1913. About half of the receipts were for timber. During the year the Government let contracts totaling \$4,000,000 for the sale of timber to be cut at once or in the future. Of the gross forests' receipts, 35 per cent. go to the States in which the forests are located, to be used for schools and roads.

WASTE FROM WOOD.

The possibility of more thoroughly utilizing the enormous quantity of waste resinous wood produced in the lumbering industry has been disclosed by an investigation just completed by the bureau of chemistry of the United States Agricultural Department. The annual waste, it is estimated, is not less than 8,000,000 cords. This, according to the investigators, can be manufactured into paper pulp, turpentine, resin oils, pine oils, wood alcohol and other products to a value of nearly \$300,000,000. The investigation shows that the industries of paper making, wood distillation and resin oil production can be developed in combination.

'Their development not only will open a profitable field of industry,' says the bureau's report, 'but should prove a big factor in the conservation, of natural resources. In addition, by the utilization of waste and fallen timber, the injury to the forests by fire and insects will be materially reduced.'

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

Mr. E. G. McDougall (Toronto, '11) has been engaged in reconnaissance work for the British Columbia Government along the Cariboo Road and the 52nd parallel. The country here is a plain or plateau, flanked by ranges of hills adjacent to the Fraser and Clearwater Valleys. The plain is semi-arid, with many alkali lakes in the southern part, except for some small patches of prairie, and some rocky barrens in the higher ranges; the country is all wooded, but contains little saw-timber of present commercial value, apart from local uses. Yellow pine finds its limit just north of the Bonaparte River; north of that point the forest growth consists of fir and lodgepole pine on the plain and spruce and balsam at higher elevations with aspen very abundant on the burns. Much valuable timber has been destroyed by fire, while on the other hand the lodgepole pine appears to have encroached considerably on land that was formerly prairie.

As the country is largely covered by surveys, the plane table is not used, and as a map holder it is replaced by a common checker-board. A vest pocket premo is the camera used, but on many occasions a panorama Kodak would have paid for its transport. Mr. McDougall has one assistant as cook and packer, and four horses.

Subsequently to writing the above, Mr. McDougall writes: Since writing you last, I haven't seen much new country, and most of the side incidents have been distressing rather than amusing in character. Pack rats and field mice have levied toll on our provisions. Can any of your correspondents describe a mouse-proof cache that can be quickly constructed for use in a temporary camp? Has anybody tried the experiment of packing a cat or a ferret? A settler here says he had luck with a tame weasel, but such an asset is not available to us campers.

In The St. Maurice Basin.

Mr. Ellwood Wilson writes of the work of the Laurentide Company as follows: 'During August and September the Forestry Department of the Laurentide Company have pushed nearly to completion a close examination of 370 square miles of timber limits. These maps have been made in great detail, showing the boundaries of all burns, muskegs, and standing timber. In the stands of timber strips have been run, covering 3 to 5 per cent. of the total stand, caliper trees and making close estimations.

'In addition to this, somewhat over two acres of jack pine, with an average diameter of about $3\frac{1}{2}$ in., have been laid out in an experimental plot. A fire-line has been cut around it; one half has been left in its present condition as a control; the other half has been thinned, basing the thinnings on the size of the crowns, so that the trees would have sufficient light, but the stand would not be opened too much. It is desired to see what effect these thinnings will have on the timber. Each tree has been calipered and listed and it is proposed to repeat the calipering each year and keep careful records of growth. This work will be extended to other areas during the coming year and various methods of thinning will be tried.

'Over a portion of their limits, toppling will again be tried by the Company. Careful cost records will be kept and the effect on reproduction and rapidity of decay on the brush will be watched.

'This Department has just brought to completion the first accurate and detailed map of the valley of the St. Maurice River covering some seven million acres. Of this nearly two million acres have been surveyed by this Department; the balance has been compiled from work of the St. Maurice Industrial Company, under Mr. de Carteret, and the rest from Government surveys.

'This Company now has a nursery, covering over half an acre, with 40,000 seedlings ready for planting next spring. These comprise Norway and white spruce, red, white and jack pine, with a few Colorado blue spruce. Experiments are being carried out with different species of trees. The Laurentide Company has planted this year about thirty acres, bringing its total plantations now to some fifty acres.

'In September Messrs. Small and Wilson of this Company made a trip to the site of the proposed dam, which the Quebec Government intends to build on the upper St. Maurice River. This will form a lake somewhere in the neighborhood of 303 square miles, will control the flow of this important river, making it uniform at all times of the year, and will do much to increase the prosperity of the region.

'The country on the head-waters of the St. Maurice River is very flat, and mostly muskeg, and the timber begins to be of the sub-arctic type. White pine, cedar and white spruce are absent, the timber consisting almost entirely of small black spruce and jack pine, with some balsam fir. Black

spruce will probably average six to seven inches and is of very slow growth indeed.

Examinations showed that it took balsam from seventeen to twenty-seven years to make one inch, black spruce from seventeen to fifty years to make one inch. There is a very large burnt area but reproduction is good.

'The St. Maurice Fire Protective Association has had a very successful year. Over 275 forest fires were extinguished with practically no damage; seven lookout towers have been constructed and telephone lines have been commenced. The success of co-operative forest fire protection has been established beyond a doubt.'

Developments in British Columbia.

Mr. MacMillan, Chief Forester for the far western province, writes:

'We have recently succeeded in putting into effect here one of the recommendations of the Canadian Forestry Association, that is, that all land before settlement should be examined by the Forest Branch to determine whether it should be opened up for settlement or reserved for timber purposes. Before applications for land are dealt with in the Coast District they are now referred to the Forest Branch for examination. We anticipate that this policy will not only save a great deal of wasted effort and misery by preventing people from settling on non-agricultural land but will also prevent the taking up of valuable merchantable timber under the guise of settlement.

'At the present time the members of the Forest Board are spending a great deal of their time in the investigation of the royalty situation. As you know the Government is now arranging to revise the royalties paid on timber held under license with a view to adopting a policy which will ensure that the public will receive, when the timber is cut, a fixed proportion of its stumpage value.'

Mr. F. W. H. Jacombe, in charge of the library of the Forestry Branch at Ottawa, has accepted the appointment of head of the Canadian responsibility district (or, for short, 'district head for Canada') of the Special Libraries Association. The membership of this association includes representatives (to the number of some three hundred) of the libraries of Canada and the United States connected with banking, insurance, manufacturing and other industrial concerns, government departments and commissions, municipal and legislative reference libraries and various other classes of libraries.

NUT GROWING.

The *National Nurseryman* of Rochester, New York, gives considerable attention to nut growing in the northern states. In a recent issue it recommends for planting in these states the American chestnut, the shagbark hickory, the American black walnut, the butternut and the American hazels. The English walnut has been little tried, but there are several very successful plantations in Pennsylvania. Nearly all of these do well in the Maritime Provinces and in southern Quebec and southern Ontario, but so far very little has been done in developing this industry.

CANADIAN FORESTRY ASSOCIATION.

The Canadian Forestry Association is the organization in Canada for the propagation of the principles of forest conservation. This it does by means of conventions, meetings, lectures and literature.

It is a popular organization supported by the fees of members, assisted by some government grants.

There is a vast field of work before the Association which is only limited by the funds at the disposal of the Association.

Those who are not already members are invited to join and assist in the work. The membership fee is one dollar per year, and this entitles the member to attend and vote at all meetings and to receive the *Annual Report* and the *Canadian Forestry Journal*. Women as well as men are eligible for membership.

Applications for membership and requests for literature and information may be addressed to

The Secretary,
Canadian Forestry Association,
Canadian Building, Ottawa, Can.

OBJECTS OF THE ASSOCIATION.

- (1) The exploration of the public domain, so that lands unsuitable for agriculture may be reserved for timber production.
- (2) The preservation of the forests for their influence on climate, soil and water supply.
- (3) The promotion of judicious methods in dealing with forests and woodlands.
- (4) Tree planting on the plains and on streets and highways.
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- (6) The collection and dissemination of information bearing on the forestry problem in general.

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Candidates for advanced standing may take examinations in any subject but are required in addition to present evidence of a specified amount of work done in the field or laboratory.

The school year begins in early July and is conducted at the school camp at MILFORD, Pennsylvania.

For further information address

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CONTENTS:	Page.
Editorial	178-9
Fire Prevention Organization	180
Northern Ontario's Timber Resources	181-3
B. C. Fire Season	184
U. S. National Conservation Congress	185-6
Forest Protection in Canada	187-9
New Brunswick, Brush Disposal in	190
Quebec's Record Revenue	191
Booth, Mr. John R.	191
Forest Engineers	192-3
Empire State Forest Products Assn.	194

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ANNUAL BUSINESS MEETING.

The annual meeting of the Canadian Forestry Association for the receiving and considering of reports of standing committees consideration of matters arising out of the Winnipeg convention, election of officers and other business affecting the cause of forest conservation will be held at the Chateau Laurier, Ottawa, on Wednesday, February 4, 1914. It is expected there will be two sessions and that during the day a delegation of members will wait on representatives of the Dominion Cabinet to present resolutions properly coming before that body.

Those desiring to bring forward motions of which notice is required should notify the Secretary at once that these may be included in the official call.

The annual meeting and banquet of the Canadian Lumbermen's Association, according to custom, will be held in the same place on the preceding day, Tuesday, February 3, and members of the Canadian Forestry Association desiring to attend the banquet may obtain tickets from the Secretary.

Further information will be contained in the official notice sent out to members, or may be obtained by writing the Secretary, Canadian Forestry Association, Canadian Building, Ottawa.

CHANGE OF ADDRESS.

Since the *Canadian Forestry Journal* is now issued monthly our mailing lists are revised with like frequency. Members who have changed their addresses, or who do not receive the *Journal* regularly and promptly are requested to write to the Secretary. Do this now before you forget it.

EDITORIAL NOTES.

There has probably never before been such a strong effort on the part of maple sugar makers to protect their pure product. The Chief Analyst for Canada recently analysed 128 samples of maple syrup and found 55 adulterated. It is reported that the adulterated samples were wholesome and palatable and a controversy has arisen. Some hold that as these adulterated samples are cheaper than real syrup and yet wholesome there is no reason why they should not be sold so that the poor man might get his 'maple' syrup and sugar as well as the rich man. The Pure Maple Syrup and Sugar Association of Quebec does not object to the sale of wholesome syrup made from cane or beet sugar, flavored with coal tar products, but what it does object to is the use of the word 'maple.' The controversy is going on warmly just now and the maple sugar men will undoubtedly make an effort to have a change made in the law and regulations to restrict the word 'maple' to products wholly of the maple tree.



The interest of the Canadian Forestry Association comes in to this controversy in this way: Maple sugar making is carried on in Ontario, Quebec and the Maritime Provinces and its centre is the Eastern Townships. Much of the land devoted to maple groves is fit for nothing but tree growth. A good maple grove properly worked and cared for is the most profitable use to which this land can be put provided a fair price can be got for the product. The claim is made that owing to the ease of making up substitutes for maple sugar and syrup, substitutes that contain nothing whatever of maple, the real product has been saleable with great difficulty. Many farmers have cut down and sold their groves for cordwood and the land is totally unpro-

ductive. This is a state of affairs to which conservationists are opposed. They want to see such land put to the best use, and the best use at the present time is a profitable maple grove. Maple syrup is a luxury and the people who buy it want to get 'maple' not syrup. They pay for 'maple' and they ought not to be humbugged with sugar cane or beets, no matter how life sustaining a combination of beet sugar and coal tar may be. The friends of forest conservation want to see the land devoted to its best use and will do what they can to keep rocky and non agricultural lands covered with trees instead of becoming barren wastes.



Readers of Canadian publications of all kinds and particularly readers of agricultural journals, have had dinned into them the dangers in the decline of population in rural Ontario—Ontario being the province in which the tendency is most marked. Rev. John MacDougall, Spencerville, Ont., has issued a book '*Rural Life in Canada*,' on this subject. He estimates that in the decade 1901-11 rural Ontario lost 373,567 people. One of the chief causes of this decline in population noted by Mr. MacDougall is the farming of soil unfit for cultivation. The invariable rule is found to be that rural depopulation is greater from those localities with the less fertile soils. Many of these soils are splendidly adapted to forestry, and Mr. MacDougall regards it as a duty of the nation to see that such soils are reforested and that further denudation of such soils be prevented. This is not a new story to the forest conservationist but evidently other people are arriving at this conclusion from another starting point. Some of the counties that have lost most heavily have large areas of abandoned sand lands and it would be interesting to follow this out county by county.

It was very significant that Hon. W. H. Hearst in addressing the Ottawa Canadian Club appealed for the support of lumbermen and the general public in his work of administering the forests of Ontario. This bears out what was said in these columns last month that the most important work before the Canadian Forestry Association was to arouse and educate public opinion. The proposals of forest conservationists are so self-evident that their clear presentation generally means their acceptance but the people are busy and they are many and the subject must be preached without ceasing. A synopsis of Hon. Mr. Hearst's address on another page will be read with interest and profit.



One subject that will not down is that of brush disposal. Almost every mail brings letters or manuscripts or printed articles on this matter. Burning has many advocates and others propose piling or lopping. Evidently the old method of doing nothing cannot long continue.



It is significant that not all the states' delegates at the National Conservation Congress at Washington were in favor of handing over the United States federal forests to the several states in which they are located. A specific and marked instance is the conclusion of the Oregon State Conservation Commission appointed by the Governor under legislative authority. This body after deliberating on this question came to this conclusion 'It would seem that everyone except those directly interested in profiting thereby has all to lose and nothing to gain by a transfer from nation to state. In our opinion the proposition is wrong in principle and would be disastrous in results.'



When Hon. J. K. Flemming, Premier and Surveyor General of New Brunswick was in Ottawa recently he stated that the new Crown Timber

Act of that province which went into force this year was working out very satisfactorily. It will be recalled that under the old Act all the timber leases ran out in 1918, and as practically all Crown Timber lands in New Brunswick are under lease that lease termination affected every limit holder. Under the present Act new leases are granted for twenty years, with the privilege of renewal for ten years more, rentals, stumpage, etc. to be readjusted every ten years. In the case of pulpwood the new leases are for thirty years renewable for a further period of twenty years. Hon. Mr. Flemming stated that practically all lease-holders under the old Act had taken out leases under the new and that he believed the new Act would prove satisfactory all around.



The movement in favor of the extension of civil service regulations to the outside service grows constantly. The *Ottawa Citizen* says 'A great service could be done to Canada by the inauguration of a civil service efficiency campaign, as the result of which all offices in the public service would be taken out of politics, and a merit system introduced which would guarantee that the best man for the job got it.'



The *Toronto News* thus concludes a thoughtful article on 'Forestry in Ontario.' 'In 1830 when forest conditions were less favorable than in Canada today the forests of Prussia produced less than 200 board feet per acre per year, giving the state 44 cents per acre net revenue. In 1907 this annual production had reached 427 board feet, with a revenue of \$2.52 per acre. Forestry has paid well in Prussia. It should pay in Ontario.'



During the past ten years, forest fires have cost Minnesota \$3,968,418.51. The fires burned over 1,682,669 acres. One great loss was recorded in 1908, when 405,748 acres were swept by fire, entailing a loss of \$2,003,633.

New Fire Prevention Organization.

Ottawa Branch of the Ontario Fire Prevention Association formed.

On Nov. 29 Mr. Franklin H. Wentworth of Boston, spoke before the Ottawa Canadian Club on fire prevention and immediately at the close of his address a further meeting was held at which an Ottawa branch of the Ontario Fire Prevention Association was formed. The Canadian Forestry Association has always been strongly in favor of this work and the list of officers of the newly formed association resembles a partial list of the Ottawa members of the Canadian Forestry Association. Last year just after the Ontario Fire Prevention Association was formed with headquarters in Toronto the Secretary of the Canadian Forestry Association was asked to act with the Grass and Timber Committee of the Fire Prevention Association in securing the insertion of warnings against careless handling of fire, in railway time tables, etc. The Secretary found the railways very favorably inclined. In fact the Canadian Pacific Railway had for the past ten or twelve years been inserting a warning to tourists and campers in all its folders dealing with this traffic. This was due to forethought of Mr. C. E. E. Ussher, Passenger Traffic Manager of the C. P. R. and one of the charter members and now a director of the Canadian Forestry Association. This it is believed made the Canadian Pacific the first railway in America to issue these warnings in its tourist and

settler literature. The Grand Trunk Railway System, it was found had also for some years under the care of Mr. H. R. Charlton, General Advertising Agent, included such warnings in its campers' and tourists' literature. The General Manager of the Bell Telephone Company of Canada, Mr. C. F. Sise, Jr., also gladly consented to place a warning about forest fires, and the name of the person who should be notified by telephone of the breaking out of fires, in all telephone directories covering forest territory, Mr. Percy Robertson of Toronto, secretary of the above committee, of which Dr. Fernow is a member, communicated direct with the head office of the Canadian Northern Railway at Toronto and found the officers of that company ready to assist in the work.

Fire loss is dead loss whether it be in the forests or in the cities and the aroused public opinion that lessens this criminal waste in the one will lessen it in the other. The Canadian Forestry Association therefore urges on the efforts of the Ontario Fire Prevention Association.

The officers of the Ottawa Branch are as follows:—

President, Hon. W. C. Edwards; 1st vice-president, C. Jackson Booth; 2nd vice-president, H. K. Egan; secretary, E. D. Hardy; treasurer, T. E. Clendinnen.

(Continued on page 183.)



Erecting Abitibi Pulp Co. plant, Northern Ontario.

Northern Ontario's Timber Resources

Synopsis of an Address by Hon. W. H. Hearst, Minister of Lands, Forests and Mines for Ontario, before the Ottawa Canadian Club.

A large and distinguished audience, in which were many lumbermen, greeted Hon. W. H. Hearst on the occasion of his first visit to Ottawa in his public capacity when he addressed the Canadian Club after the luncheon held in the Chateau Laurier on Nov. 8.

In opening his address Mr. Hearst pointed out that by the addition to Ontario in 1912 of the District of Patricia, with an area of 157,400 square miles, the province now had an area of 418,262 square miles. Of this large area the province had parted with less than 10%, leaving in the Crown in the neighborhood of 375,000 square miles. Ontario was now the second largest province in the Dominion, being exceeded by the Province of Quebec with an area of 706,000 square miles, and followed by British Columbia with 357,000 square miles. About thirteen million acres of land was under cultivation, which amounted to less than 6% of the total area of the province. The field crops of the Dominion for 1912 were worth \$511,000,000, of which Ontario contributed \$192,000,000 worth or fully 37% of the total field crops of the Dominion, exceeding the two largest provinces of the West by over \$26,000,000.

Mr. Hearst dealt in detail with the mineral output of Ontario, and then took up the question of timber. He showed that since Confederation (1867) the province had received a revenue from timber of over \$47,000,000, and the revenue for 1912 from this source was \$1,985,000.

The value of forest products in the Dominion in 1911 was \$166,000,000, about \$22.00 per head of the population of which Ontario contributed a large part. Mr. Hearst illustrated one important aspect of the timber industry in that every year northern Ontario required in farm produce, and other supplies needed for the men in teams engaged in the north country, over two and one half million dollars worth. He also pointed out that besides its initial value in the rough, timber went into almost every kind of manufacture, and that in 1912 Ontario used over \$19,000,000 worth in her manufactures, of which 82% was produced in the province itself.

Ontario's Standing Timber.

As to what standing timber Ontario had, they had not as full a record as they wished, or as they hoped to have in the near future. But the reports of the experts of



Scene on National Transcontinental Railway, Northern Ontario.

the Department indicated that the Province of Ontario had on lands of which the whole title both to land and timber remained in the Crown, at least thirteen and one half billion (13,500,000,000) feet of red and white pine; and on lands licensed to lumbermen about seven billion feet of red and white pine. Of spruce pulp wood the stand on Crown lands was at least three hundred million cords. Turning these into dollars they had an asset in timber of three or four hundred million dollars, and that was without taking into consideration the hardwood or any wood outside of red and white pine and spruce.

One of the steps that had been taken with reference to the conservation of timber was the formation of forest reserves and national parks. These were as follows: — Temagami Forest Reserve 5,900 square miles, Mississauga 3,000 square miles, Nipigon 7,300, Algonquin Park 2,066 square miles, Sibley Reserve 70 square miles, Eastern Reserve in Frontenac County 100 square miles, Quetico Forest Reserve 1,700 square miles, and Rondeau Park, a small park on Lake Erie.

In all the province had over 20,000 square miles in forest reserves and provincial parks, and in these reserves they had at least ten billion (10,000,000,000) feet of pine, and possibly twenty million (20,000,000), cords of pulpwood. These reserves and parks were lands that were not adapted for settlement, and it was not intended to let settlement into them, or to endanger the preservation of the timber. In Algonquin Park they had received back into the Crown a number of licenses that originally existed for the cutting of timber, and they hoped in the near future to have all the title to the timber in that park.

Mr. Hearst pointed out that conservation did not tolerate the waste that would result from locking up timber. Trees ripened just like other crops, and unless cut within a reasonable time they began to decay and were eventually entirely lost. So, one of the problems they had was to arrange to harvest the ripe crop so that the most might be obtained from it for the province and for commerce and industry, and still retain the unmatured trees so that the benefit from them may be reaped by the generations that come after. In this problem he asked the hearty sympathy and co-operation of the lumbermen of Ontario.

So much for lands not suited to agriculture. On lands fit for settlement the problem was to find the best method of getting off the timber to get the most out of it and at the same time benefit the incoming settler. The only practicable solution that he knew was to encourage the establishment of industries that would manufacture the timber from the settler's land.

This would aid the industries of the country and would give a market to the settler so as to enable him to get some return from his work in clearing his land.

Already considerable had been done in that line in saw mills and related industries. On the north side of the Height of Land pine ceased and the timber of greatest importance there was spruce and other soft woods. There had been established at Sault Ste Marie, Spanish River, Sturgeon Falls, Fort Frances and Dryden large pulp and paper plants which would work up this timber, and at the present time a very large plant was being constructed in the Abitibi district. In the near future they expected to have more similar plants.

Reforestation Sand Lands.

This was the situation in regard to timber lands unfit for settlement, and those fit for farming and into which settlement was being directed. There was a third class of lands, namely, those not fit for settlement but which owing to mistakes in the past (and he was not blaming anyone) had been cleared and cultivated. In the old part of Ontario a careful estimate indicated that about 9% was in woodland of a more or less inferior character, and that probably as much more might be better employed in growing timber than for any other purpose owing to the character of the soil. In other words they had in southern Ontario approximately ten million acres of wood land or land which was only fit for timber. These lands were privately owned, and the Province was endeavoring to encourage the owners to develop their woodlots and reforest the waste places that were now totally unproductive. It was to be expected that they would make rather slow progress in this educative work, for even in Germany, perhaps the most advanced country in the world in forestry, the privately owned woodlots were in anything but a satisfactory condition. In 1906 an Act was passed permitting municipal councils to pass by-laws exempting woodlots from taxation, but so far as he knew this had never yet been taken advantage of.

In 1905 a forestry station was established at Guelph under the Department of Agriculture, which acted as a bureau of information for the province generally. Last year this station was transferred to his own Department of Lands, Forests and Mines, and since then the work had been carried out on a somewhat larger scale. The nurseries had been removed to St. Williams in Norfolk County. Here they had acquired about sixteen hundred acres of sand lands for forest plantations, where they were carrying on perhaps the most extensive exemplification of forestry that was to be found in the Dominion. They were doing this to show by actual demon-

stration what could be done by reforestry for these sand plains that had become absolutely useless for any other purpose. The staff of experts there were giving information by bulletins and by lectures to encourage farmers to take up this work, and from the nursery over one and one half million forest seedlings had been distributed to woodlot owners in all the southern counties of the province.

So far as northern Ontario was concerned, artificial reforestation was not now a practical question. Nature was doing more than they could in an artificial way in northern Ontario. It would cost anywhere from six to fifteen dollars per acre to plant up these lands, and they could expend the money to much better advantage in acquiring lands on which there was considerable growth at the present time.

Cost of Fire Protection.

But the great question in the north was to secure proper cutting and protection from fire. He doubted whether they fully appreciated as a people the immense areas of timber land that Ontario had in its absolute possession. Only a small area of land had been alienated from the Crown, leaving tens of millions of acres for the Province to use as it thought best. As to fire ranging, a few years ago a new arrangement was made with the lumbermen whereby they bore the total cost of the fire ranging on their limits. The Province placed over these supervising rangers who had authority to compel limit holders to put the necessary number of men on these limits. Then upon Crown timber lands and forest reserves the Province employed its own rangers. They had also provincial patrols upon railway lines and other places where there was special danger. Last year there was a staff of 925 rangers on Ontario's timber lands. The cost of fire ranging to the province was \$233,000. If to that was added what he was informed was paid by the limit holders, namely, \$92,000, it would be seen that the total cost of fire ranging in the province last year was \$325,000. They were gradually strengthening and perfecting the system of fire protection in the north. This included the erection of telephone lines and lookout stations. It was impossible to totally prevent fire in these millions of acres, but the Government was endeavoring to minimize that danger as much as possible. But the Government could not do all this itself, it required and asked the co-operation of lumbermen and citizens generally. Last year he had had an Act passed in regard to the making of ties, by which the Government might suspend this work during the danger season from April to August, or might make such regulations as it deemed proper.

It seemed to him that perhaps the time had now come when they might require railway companies to treat these ties so as to extend the life of them as long as possible, and thus conserve that kind of timber.

Mr. Hearst then gave a review of the timber regulations in Canada from the earliest time, and pointed out that a number of the gentlemen that he saw before him whose names were household words in timber districts all over Canada, had themselves experienced a number of these changing regulations.

In closing Mr. Hearst said they sometimes heard too much of the differences between the manufacturing East and the grain-growing West. Perhaps one of the things that had helped to keep these two sections apart was the hitherto unoccupied portion of northern Ontario. To his mind that north land with its wealth of timber, minerals and water powers was bound to become one of the great manufacturing centres of the continent. It might be the home of millions of people in the not far distant future, and would thus bridge over the gap between East and West. In future there would be neither East nor West, but a united Canada from Atlantic to Pacific. He concluded, 'This is the object I have before me as a public man. This is my ideal that I have in view. Then I hope we shall perform our duty as citizens of this fair province of Ontario so that we shall make this great Dominion of Canada not only a source of strength to, but the dominating influence in that empire whose flag encircles the globe, whose standard is righteousness, whose path is duty.'

NEW FIRE PREVENTION ORGANIZATION.

(Continued from page 180.)

Executive committee—Sir H. N. Bate, Cecil Bethune, R. H. Campbell, W. H. Dwyer, H. L. Drayton, C. D. Findlayson, Chief Graham, Frank Hawkins, Controller Kent (as fire commissioner), J. A. Machado, Col. C. P. Meredith, P. D. Ross, Walter Ross, W. H. Rowley, W. M. Southam, E. Norman Smith, H. I. Thomas, Mayor Ellis, J. R. Booth, Chief Ross, City Engineer Currie, Mr. A. Alford, Ex-M.P., Dr. Chabot, M.P., E. J. Laverdue, Controller Parent.

The following constitution was adopted:

The objects of this association shall be to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the co-operation of its members in establishing proper safeguards against loss of life and property by fire.

The Fire Season in British Columbia.

The Vancouver *News-Advertiser* recently had a very appreciative article of the work of Mr. H. R. MacMillan and the British Columbia Forest Branch of which the following is a condensation:

The forest fire damage of 1913 is the smallest in the history of this province. While the weather is responsible for a share of the credit, it is the efficiency and the organization of the Forest Branch which has been the big factor of this splendid record.

The Forest Branch has a staff which, including forest guards and patrolmen on duty, numbered 415 during the summer. Thirty rangers and 280 guards protected the forests from the fire, while eleven district foresters and twenty-three forest assistants were largely occupied with these duties. Fifty-one of this staff of 415 were railway patrolmen, part of whose wages are refunded to the Government by the railroads, and in addition there were about sixty railway employees who were employed on patrol duty.

Telephone Lines.

The enormous area of merchantable timber which this small army was able to supervise was practically honeycombed with a system of telephones and look-out stations. The telephones are built by the forest branch for protection in places where it is certain that commercial lines will not be established in the near future. The majority of the lines are tree lines, poles being eliminated as far as possible on account of expense. The work is carried out under the supervision of expert linemen, but a large part of the labour is supplied by forest guards.

There are two classes of telephone line for fire protection. One is a long line built from some central point through heavily timbered country such as a river valley. The object of this class is to make quick communication with headquarters possible, so that assistance and supplies can be sent at the shortest notice.

The second class of telephone line is that built from some headquarters of the fire patrol service to a look-out point commanding an extensive view of timbered country.

Of these the Mount Baker Look-Out Station is perhaps the most interesting. In this station, at an elevation of over 7,000 feet, the Forest Branch has the honor of having the highest telephone line in Canada. From this station a view is possible

in every direction of over thirty miles, and a fire in any part of that area can be immediately reported directly to the District Forester at Cranbrook.

The B. X. Mountain Look-Out Station, in the Vernon district, commands the largest single body of licence timber in the district, and fires can be reported directly to the District Forester at Vernon. The Vernon City Council showed their appreciation of this project by voting \$300 contribution towards it.

Trail Building.

The policy of the Forest Branch in trail building is firstly to open up important bodies of timber both for patrol and to make them accessible in case of fire; and secondly to connect up existing trails or roads so as to allow round trip patrol. Whenever horses are available, horse trails are built. Heavy grading and rock work are avoided wherever possible, but, on the other hand, excessive grades are also avoided, the idea being to obtain as great a distance as possible of practicable trail for the money. The trails are, as a rule, built by small crews working under the direction of a Forest Guard or Forest Ranger. Made somewhat roughly at first, they will be improved each year by the Forest Guards during patrol and slack times. In no case does the Forest Branch build a trail where it is probable that one will be built soon by other interests for other purposes.

Slash Burning.

The chief slash burning carried on in the province so far has been done in railway construction, where all the debris is piled in the centre and burned clean. In addition, all those railroads under construction have been required to pile all slash resulting from the cutting of ties, bridge timber and other construction timber. This work has been carried on by the G. T. P., C. N. R. and P. G. E., etc., under the direct supervision of officers of the Forest Branch, with results on the whole very gratifying.

Less has been done in this direction by loggers, but, nevertheless, an encouraging start has been made. The Forest Branch has used every opportunity to encourage loggers to dispose of their slash with the result that this year over 15,000 acres of slash were burned by private parties. It is confidently expected that a much larger amount will be burned next year, because this was an unusually wet season and the slash, therefore, difficult to burn.

National Conservation Congress

Proceedings of the Fifth Annual Gathering at Washington, D. C.

The Fifth Annual National Conservation Congress of the United States was held in Washington, D.C., Nov. 18, 19 and 20, the main meetings being held in the ball-room of the New Willard Hotel, and the sectional meetings in smaller rooms of that and other buildings.

It was intended that the main interest on this occasion should centre in forest and water power conservation, and as it turned out the time of the meeting was nearly wholly taken up with the latter in its relation to State versus federal rights, and the danger of monopolistic control of water powers.

The chair at the opening session was occupied by Mr. Charles Lathrop Pack, the president, and the first speaker was Hon. David Houston, Secretary for Agriculture in President Wilson's cabinet. Mr. Houston while instancing the great need of better farming, held that the most pressing need was an improvement in methods of distribution that would give the farmer for his products a larger share of what the consumer paid for them.

Hon. James Wilson, ex-United States Secretary for Agriculture, spoke on soil conservation, and Mr. James White, Assistant Chairman of the Canadian Commission of Conservation, told of the work of that body, particularly in regard to forest fire prevention along railways through co-operation with the Canadian Board of Railway Commissioners.

The Waterpower Battle.

The committee on waterpowers, which had been at work all that morning and all the preceding day, presented three reports in the afternoon. The first report presented the resolutions on which all the committee were agreed, the second was of the majority and the third of the minority, which latter was signed by Hon. H. L. Stimson, former Secretary for War, Joseph N. Teal of Portland, Oregon, and Dr. Gifford Pinchot ex-Chief Forester of the United States.

The unanimous report stated that compensation for privilege of waterpower use should be reserved to the government, state or federal, from which the privilege came. Both majority and minority reports agreed that the three essentials of a sound waterpower policy were: Prompt development, Prevention of unregulated monopoly, Good service and fair rates to the consumer.

The majority favored the indeterminate franchise with no fixed term limit. The minority would allow a period not exceeding thirty years during which the franchise would be irrevocable except for cause. The minority specified ownership by an unlawful trust, or in restraint of trade as sufficient for immediate termination of the franchise. The minority report stated the central fact in the waterpower situation today was that of concentration of control. Ten groups of individuals controlled 65 per cent. of the waterpower of the United States, and the amount of concentration had nearly doubled in the last two years. The fight for the conservation of waterpowers was first of all a fight against monopoly. The second prime necessity was to forbid and prevent the speculative holding of power.

The majority report stated that it was essential that capital should be attracted to these enterprises, and while they must fully protect the interests of the public both present and future, they were not conservationists if they advocated the imposition of terms which restricted rather than encouraged progress.

Senator Shaforth, one of the early speakers in the debate on the motion to adopt the unanimous report, said, 'I have never been impressed with the idea that down here in Washington you can control waterpowers or anything else as well as we can in our own States.' He declared there could never be any danger of monopolistic control of waterpower because under the United States statutes the transmission of power between states brought the companies under the Interstate Commerce Act, and the federal government had as much right to fix their rates as it had those of the railways.

Several other speakers took this attitude, while Mr. Pinchot, Mr. Stimson and others replied by urging the activity of the waterpowers trust, and stating that the United States could control companies and monopolies which were so strong that they could control state legislatures.

The vote was on the question of sending the unanimous report to the resolutions committee. This was finally, defeated by a majority of 434 to 154, and the report adopted by the Congress without roll call.

The States Rights Question.

This first vote took place on Wednesday afternoon, Nov. 19. On Thursday the Resolutions Committee in reporting on the ma-

jority and minority reports referred to it submitted that the matter had been taken from its hands by the action of the Convention in adopting general principles on which the whole committee were agreed.

When the report had been read, Dr. Gifford Pinchot, former forester of the United States, and father of the minority waterways report in the congress, moved as an amendment to the resolutions committee's report a declaration of principles on waterway control similar to the ideas in the minority report signed by himself. Henry L. Stimson, former Secretary of War, and Joseph N. Teal of Oregon.

This amendment was adopted by a vote of 317 to 96 after one offered by Representative Burnett of Alabama, which proposed to insert the words 'state control' wherever 'public control' appeared had been defeated, 378 to 132.

It was upon these motions that the convention was brought to a stormy climax, and at one time some of Mr. Pinchot's friends, including the president of the congress, urged him to consent to an adjournment. Motions to adjourn were made before the final roll calls, but were hooted down by the convention.

Among those who led in the fight for federal as opposed to state control were Messrs. Gifford Pinchot, Hon. W. L. Fisher, ex-Secretary of the Interior, Hon. H. L. Stimson, ex-Secretary for War, and Hon. James R. Garfield, also an ex-Secretary of the Interior.

Delegates from the District of Columbia supported the motion while the state delegates were not all for states' rights. The delegates who spoke and voted against federal control came chiefly from Alabama, Arkansas, Colorado, Kansas, Louisiana, Montana, Nevada, New Mexico, South Carolina, Tennessee and Washington State.

The Points at Issue.

As the matter, so to speak came into the Congress on a slide wind, the situation may perhaps best be explained by quoting the words of the leaders on both sides after the contest was over.

Mr. Pinchot said:

'The vote this afternoon was on two perfectly clear issues. Although the so-called Pinchot amendment had nothing to do with states' rights, the states' rights men injected that question and were defeated by three to one. The other issue was whether or not the National Conservation Congress should take strong ground as to the charge of monopoly in waterpower, or whether the waterpower interests at the congress should prevent it from doing so. The waterpower interests failed to bottle up the congress, and again were overwhelmingly defeated.

'Now that the fight is over, all of the friends of conservation should be glad of the victory for the public control of this great public necessity and should get squarely behind the movement to open the waterpowers to full development without delay and on terms fair to the power interests as well as to the public. We took a real step forward in conservation this afternoon.'

Mr. Walter Powell, chairman of the Arkansas delegation said 'I have been delegated by the representatives of twenty-three states of the middle west, and south, to call a separate convention, which will take up only the subject of waterpower and irrigation. It will be composed of practical men, not of government officials and former cabinet officers, and will try to come to some definite conclusion on the subject of conservation from the practical and not the theoretical standpoint. This convention will be held in about a month, and states from Maine to California will be represented. It will probably be held in Washington, though it might possibly be held in St. Louis.'

The Pinchot Amendment.

The Pinchot amendment declared that monopolistic control of waterpower in private hands was swiftly increasing in the United States 'far more rapidly than public control thereof'; that increasing 'concentration of waterpower in some hands was accompanied by growing control over the power consuming agencies, the public service companies of the country.' It continued:

'Whereas this concentration, if fostered, as in the past, by outright grants of public powers in perpetuity, will inevitably result in a highly monopolistic control of mechanical power, one of the bases of modern civilization and a prime factor in the cost of living.

'Therefore, be it resolved, That we recognize the firm and effective control of waterpower corporations as a pressing and immediate necessity urgently required in the public interest; that we recognize there is no restraint so complete, effective and permanent as that which comes from firmly entrenched public ownership of the power site, and that it is the solemn judgment of the fifth National Conservation Congress that hereafter no waterpower now owned or controlled by the public should be sold, granted or given away in perpetuity, or in any manner removed from the public ownership, which alone can give sound basis of assured and permanent control in the interest of the people.'

Officers Elected.

The congress elected Charles Lathrop Pack of Lakewood, N.J., as president to succeed himself; Mrs. Emmons Crocker, Fitchburg, Mass., vice president; N. C.

McLoud, Washington, D. C., recording secretary; Dr. Henry S. Drinker, South Bethlehem, Pa., treasurer, and Thomas F. Shipp, Indianapolis, corresponding secretary.

Other Business.

Miss Mabel Boardman, President of the National Red Cross Association, read a paper in which she proposed that the N. R. C. Association should provide \$500 for \$2,500 provided by lumbermen in a given locality to defray the salary and expenses of a physician to teach the men in lumber camps first aid to the injured and the prevention of accidents.

Mr. E. A. Sterling held that when the virgin timber of the United States was used up forest supplies would have to come from national and state forests. He held

that present tendencies in private forest management were now logically developing the fire protection and natural regeneration aspects, and that after this would come more intensive forestry.

Mr. H. S. Graves, Chief Forester of the United States, read a paper on Federal Forestry. The policy ahead was the development of the present plans of delimitation, classification, segregation of agricultural from forest lands and the handling of the latter under permanent policies based on full recognition of lasting public interests. He showed how the present United States forest policy was steadily winning out in every way.

These and other addresses will be dealt with more fully in future issues of the *Canadian Forestry Journal*.

Forest Protection in Canada, 1912.

Report of Mr. Clyde Leavitt, Chief Forester, Commission of Conservation and Chief Fire Inspector Board of Railway Commissioners for Canada.

The report of Mr. Clyde Leavitt, M.Sc.F. Chief Forester of the Commission of Conservation of Canada, and Chief Fire Inspector of the Board of Railway Commissioners which has just been issued is a document of 175 pages illustrated by numerous engravings which add to the clearness of the letter press descriptions.

The report is divided into six parts and three appendices dealing with specific aspects of the subject.

Protection from Railway Fires.

Part I. is devoted to Protection from Railway Fires. It first deals with the passing of Order 16570 by the Board of Railway Commissioners for Canada which directs the railways to provide fire preventive appliances, fire patrols, etc., and places the authority for seeing these carried out under the Chief Fire Inspector, Mr. Leavitt. He points out that the three railways which are not subject to the regulations of the Board of Railway Commissioners are the Intercolonial and National Transcontinental Railways (owned by the Dominion Government) and the Timiskaming and Northern Ontario Railway owned and operated by the Ontario Government. As soon as this order was passed Mr. Leavitt undertook the work of organizing the inspection of appliances, fire guards and patrols in Western Canada. The Dominion Forestry Branch had already prepared a plan of patrols over the railway



Mr. Clyde Leavitt.

lines in Manitoba, Saskatchewan and Alberta and in the Railway Belt in British Columbia; and the Government of British Columbia had prepared a similar plan cov-

ering all other lines in British Columbia. These bodies and the Department of Lands and Forests for Ontario provided inspectors for all the railway lines from Lake Superior to the Pacific Ocean.

Forest Fires and Brush Disposal.

Part II. deals with settlers' slash and lumbering slash. It is recommended in regard to the former that the time of burning be fixed and that there be a sufficiently large force of rangers to see that the law is carried out. Regarding lumbering slash it is stated that while patrols and other measures would continue to be necessary the root of the problem could best be reached through disposal of the slash. In the case of unleased lands held by Dominion and Provincial Governments. Mr. Leavitt holds no trouble should ensue, since when new areas were leased the new requirements in regard to brush disposal would be taken into consideration by the lumbermen in bidding on the limit. In the case of renewal of licenses, while not so easy, still the growing value of the stumpage and the need of protecting the holdings were all factors in making the new price.

Then follows a review of methods in the Adirondacks, in the United States National forests in Idaho, Montana and Minnesota, in Oregon and Washington, and in Minnesota State forests. The general trend of this review is to show that everywhere there was a growing recognition that brush must be disposed of and that there is a disposition to try different methods and to adopt those best suited to each condition and locality.

Top-Lopping in the Adirondacks.

Part III. continues this brush disposal problem by discussing top-logging in the Adirondacks. It is set out that in 1908 very severe fires swept the Adirondacks and as a result a conference of lumbermen and the State Forestry Commission decided that the best way to check these fires was to lop the tops of all coniferous trees cut for commercial purposes. This was crystallized into law in 1909 and since that the fire loss had been greatly reduced. Owing to fewer losses and the feeling that the financial burden was too great lumbermen protested in 1912 against the continuance of the practice. A series of field investigations was held to reconsider the question. Mr. Leavitt attended these for the Commission of Conservation and Mr. T. W. Dwight, Assistant Director, for the Dominion Forestry Branch. The matter was fully gone into and as a result it was decided that where brush burning was practicable this was the most efficient method of slash disposal; where it was not practical the lopping of tops might be advisable. The beneficial effects of top-logging it was held outweighed the disadvantages

due to any possible injury to soil, reproduction or old growth. Lopping to only a three inch diameter materially reduced the cost. Since the preparation of this report the New York Legislature had changed the law so as to make compulsory only lopping to down to three inches in diameter.

Oil as Locomotive Fuel.

Part IV. deals with the use of oil as locomotive fuel. Mr. Leavitt states that in 1912 oil was used wholly as fuel on 20,910 miles of railway in the United States and 587 miles in Canada; and used in conjunction with coal on 4,720 miles additional in the United States. All the railways using oil fuel in Canada were in British Columbia; and were: Canadian Pacific, 338 miles; Esquimalt and Nanaimo, 134; Great Northern, 115. As to effectiveness it is stated that the use of oil practically eliminates all danger of forest fires due to locomotive operation. The use of oil was increasing on the west coast where convenient supplies made it cheaper than coal.

Forest-Planting in Canada.

Part V. takes up the subject of forest planting. Investigations of the Dominion Forestry Branch indicated that half of the original forest of Canada had been destroyed by fire. This timber would if cut have yielded not less than a billion dollars to the revenue of the country. There were enormous areas of non-agricultural land in Canada which however, were very suitable for the growth of timber and should be put to that use.

The subject is then dealt with geographically from east to west. Mr. H. R. Christie of the B. C. Forest Branch deals with the situation in British Columbia and comes to the following conclusions: 1. Forest planting in British Columbia is silviculturally possible. Hardwoods may be grown as well as soft woods. 2. Forest regeneration in B. C. is financially practicable, and possibly also forest planting. 3. But forest planting is now, in general, neither necessary nor the most profitable way to spend time, energy or money in British Columbia.

The statement regarding tree planting in Alberta, Saskatchewan and Manitoba was prepared by Mr. R. H. Campbell, Dominion Director of Forestry. The work of farm planting was begun in 1901 with the sending out of 58,000 trees from the Experimental Farms at Brandon and Indian Head. In 1912 this output of trees from the Forest Nursery Station had increased to 2,729,135 trees to 3,618 farmers. The total sent out to the end of the planting season of 1912 was nearly 22,000,000 seedlings. These were planted for shelter belts and wood lots and consisted chiefly of Manitoba maple, elm, ash, cottonwood willow and Russian poplar. In 1911 distribution of

coniferous trees began. The species were white spruce, Scotch pine and tamarack.

A beginning has been made in planting on the Spruce Woods Reserve near Brandon and on the Turtle Mountain Reserve in Southern Manitoba. On the former over 50,200 transplants were living, and on the latter a plantation of 14,000 Scotch pine was doing well. Preparations for much larger planting operations on the Spruce Woods Reserve were under way. Seven thousand five hundred transplants on the Riding Mountain Reserve were doing well. Planting had not been considered necessary on the Rocky Mountains Reserve as natural reproduction was excellent. Seeding had not been successful except in certain spots on the Turtle Mountain Reserve.

The Canadian Pacific Railway of which company Mr. R. D. Prettie is superintendent of Forestry had planted 1,356,200 trees along its main line between Calgary and Winnipeg. These trees were grown at the company's nursery at Wolseley, Sask. The object was to form windbreaks and thus do away with the necessity for maintaining portable snow fences to prevent the drifting of snow across the railway tracks. The loss and renewal of these trees had not exceeded ten per cent. The company also had set out 25,000 tamarack trees near Wolseley to determine the feasibility of growing railway ties and fence posts. The average height of trees in this plantation in 1912 was 9 ft. and the diameter 18 inches from the ground $1\frac{1}{2}$ inches. The height growth for the season of 1912 was 1 ft. 8 inches. The company was also giving prizes to induce settlers on its lands to grow trees about their farm buildings.

Forest planting in Ontario is described in the report by a statement taken from the report of Mr. E. J. Zavitz provincial forester of Ontario. It was estimated that about 10,000,000 acres in Southern Ontario was suited only to forest growth. As much of this had been cut off the Ontario Government had embarked on a scheme of co-operation by which advice and planting material were furnished free of charge to parties planting wood lots. Up to 1912 1,500,000 trees had been sent out from the Provincial nurseries. The planting had been chiefly on waste soils, such as sand formations. The forest nursery station in Norfolk county contained 1,500 acres in 1912. This station was being planted up with experimental plantations, and was also being used as the source of supply for nursery stock. Legislation was passed in 1911, permitting counties to acquire and operate land for forest plantations. The county of Hastings had secured 2,200 acres of cut over lands and the purchase of additional lands was contemplated. Fire protection and natural restocking from seed trees would be the policy pursued for the

present. Other counties were looking into the matter.

The statement in regard to Quebec was prepared from the report of the Minister of Lands and Forests and from a statement by Mr. G. C. Piché, chief of the Quebec Forest Service. The Government had a nursery station at Berthierville where seedlings were supplied to farmers to plant their woodlots and where seedlings were also grown to plant up sand land areas, such as at Lachute, acquired by the Government. These were acquired at the rate of \$1 per acre with the agreement that the former owners might reacquire them upon paying the cost of the planting which it was guaranteed would not exceed \$10 per acre. Twenty-five acres at Lachute were reforested in 1912. It was intended to assist the rural communities by establishing township reserves where the inhabitants might cut wood required for their real wants.

Mr. Ellwood Wilson forester for the Laurentide Company furnishes the data for the planting of that company which in 1912 had reached fifty acres. The trees used were Scotch, white and jack pine, white and Norway spruce, hemlock and basswood. The company expected to plant 200,000 trees per year and would plant up its waste lands with the object of supplying wood for making pulp and paper. Different methods of cutting were being tried with the object of testing reproduction.

On account of the excellent natural reproduction in the Maritime Provinces the necessity for artificial planting had not been strongly felt were up to the present. The great need was instruction in the best methods of handling existing timber lands. Nothing in the way of encouraging replanting had been done by the governments but there had been some planting under private initiative.

With the assistance of Mr. R. B. Miller, Professor of Forestry in the University of New Brunswick, Dr. A. R. Myers had planted fifteen acres of white pine near Moncton, N.B. The Pejepscot Paper Company had a nursery at Salmon River, N.B. and another at Cookshire, Quebec, with the idea of planting its cut over lands.

The Rhodes-Curry Company of Amherst, N.S., had planted about fifteen acres of Norway spruce seedlings on smoe of its burnt over lands near Little River, N.S. The object of these plantations was to get data as to the probable success of larger efforts.

Committee on Forests.

Part VI. embodies the report of the Committee on Forests made to the Commission of Conservation in 1912. A synopsis of this was published at the time. The recommendations are as important as they then were and include the following: that

the Dominion Government establish fire protection service on the Intercolonial and National Transcontinental Railways; that the Governments of New Brunswick and Nova Scotia be urged to form forest fire protection services; that brush disposal be carefully considered by all forest owning governments; that co-operative fire protective associations be approved; that Dominion and Provincial Governments be urged to make a systematic study of the extent and character of the forest resources within their bounds, etc.

The remainder of the report is taken up with three appendices. These embrace a study of the extension of the Dominion Government Forest Reserves and the report of Mr. J. H. White on the district lying between Sudbury and Port Arthur. The general summary of this report is that the whole of the area between Mattawa and Nipigon and south of the Clay Belt should be made a forest reserve. Opinions on oil fuel given by railway men, foresters, and mechanical experts conclude the report which is well prepared and provided with a copious index which renders all parts readily available.

BRUSH DISPOSAL IN NEW BRUNSWICK.

Views of the Deputy Minister of Lands and Forests.

Lt.-Col. T. G. Loggie, Deputy Minister of Lands and Forests for New Brunswick, writes in the current issue of the *Canada Lumberman*:

I have read Mr. Allen's able articles in your two editions of October 1st and 15th and quite agree with all he says regarding waste in logging operations. To get the top out of the woods is something many of us have been striving after, for a great number of years. The Timber Regulations of this Department for some time have contained a provision that all logs must be taken out up to 5 inches in diameter, and, while I do not claim that it is wholly carried out in practice, our lumber operators are gradually seeing that an era has arrived when less wasteful methods must be followed to get the true value from our forests.

Mr. Allen in his two articles has not touched upon the more important aspect in the removal of the tops, viz., the lessening of the fire danger. I am quite convinced that, if the land owner were to allow the operator to remove these tops without stumpage cost, with a further provision that the crowns of the trees should have their under branches lopped off, it would, to a large extent, minimize the fire danger, and be a tremendous advantage to our forests.

I also quite agree with what Mr. Allen says about more forest supervision in the actual work of lumbering. These matters have been repeatedly advocated at meetings of the Canadian Forestry Association and the time is assuredly coming when wasteful methods such as he speaks of will be, to a large extent, if not altogether, eliminated from forest operations.

I will say for Mr. Allen's information that I have leased some lands of my own for a considerable spruce operation which required the log-getter, not only to pay the same stumpage for the tops as for the merchantable, but to remove everything up to five inches and to underlop all the crowns. All trees are sawn down at the swell of the roots and sawn up into lengths. I have placed competent overseers to see that the conditions are carried out and I expect to have good results. Ten years ago I would have been laughed at, were I to have exacted these conditions.

I am sorry I cannot agree with Mr. Allen in his statement that after virgin growth is cut away, quite as good never follows. This statement is something new to us, and upsets the principles of nature. If one were to follow this reasoning, as well might he say that when you break up land and sow it to wheat, you will never have so good a crop as the first one. My theory is in lumbering: remove the merchantable log at maturity; let in the air and light, and the same process will rotate, resulting in a bountiful nature supplying as good a log as the virgin one that was cut away.

DAMS VERSUS FORESTS.

The waterworks commissioners of the city of Brantford, Ontario, have instructed the city engineer to prepare plans for a dyke to protect the waterworks property and the lowlying lands between the canal and the river. The city of Brantford has been building dams for twenty years to protect its lower parts from the floods of the Grand River. Mr. Thomas Southworth, when Clerk of Forestry for the Province of Ontario, was consulted on this matter and told the people of the lower Grand River Valley that they had begun at the wrong end, and that, instead of building dams at Brantford and Galt, they should have kept trees on the hillsides of the upper waters of the river. This is also the conclusion of Mr. W. H. Breithaupt C.E. in his paper read at the Victoria Convention, wherein he pointed out that the forest at the headwaters of the Grand River which regulated its flow, had been ruthlessly cut off to make farms, with the result that floods now occurred nearly every spring, while on the other hand this particular land was, much of it, not even third rate farming land.

QUEBEC'S RECORD REVENUE.

A despatch from Quebec states: In his annual report submitted to the Quebec Legislature, Hon. Jules Alard, Minister of Lands and Forests, states that the receipts of the Department for the year amounted to \$1,760,466.25, the greatest revenue ever received by that department. Part of this amount was derived from the sale of land, but the chief revenue comes from the woods and forests department, the cutting licenses alone giving \$1,134,147.19, the rent \$330,203.09, and penalties, interest, etc., bringing the total up to \$1,510,171.41. The fire protection system was successful in preventing all but a few fires. Seventeen stations were established for observing the water-powers of the province at all seasons, for the purpose of noting their adaptability for industrial purposes.

MR. BOOTH'S PHILANTHROPY.

Mr. John R. Booth, Ottawa's veteran lumberman, has donated a new wing to St. Luke's Hospital, Ottawa, at a cost of \$125,000. Mr. Booth has been president of the Board of Directors of the institution for many years. Mr. Booth is now very largely recovered from the serious injury which he recently suffered when he was struck by a falling timber at one of his mills which had been destroyed by fire.

THE HARDY CATALPA.

Warning Issued against planting in the North.

The New York State College of Forestry has issued a warning to farmers against planting the Hardy Catalpa tree in New York State, except for experimental purposes. A college bulletin states that many land owners have been induced to

plant this tree because of statements regarding its growth and durability, and that without doubt much planting has been done that will result in failure. It points out that the Catalpa is a native of river bottoms in the middle west of the United States, where, under favorable conditions it makes exceedingly rapid growth. Because of the ease with which the nurseries grow it from seed it has been exploited very widely through the country, and it is believed has been planted too widely in New York State. This bulletin goes on to point out that the Catalpa is a specialized forest crop requiring good agricultural soil and more care than the ordinary farmer cares usually to give it. As the college authorities do not want to see land of any value for agriculture used for forestry, they urge farmers to plant Catalpa only in very limited quantities and as an experiment. If there are idle lands in the State in the form of hill sides or ridges it would be better to grow quick growing ever-greens, such as red and white pine or Scotch pine, or such hardwoods as the common black or yellow locust. Experience with the Catalpa in States to the west of New York does not promise success with it in the latter State.

As there has been considerable attempt at exploitation of the Hardy Catalpa in Ontario it may be well to say that the view of persons of experience is that these warnings in regard to New York State would apply with equal force to this Province.

A writer in the *Toronto Daily Star* urges the Province of Ontario to go into fur farming as a public business. He argues that Ontario is one of the greatest producers of fur in the world. Strict laws have caused the increase of the fur bearing animals, notably beaver, and yet the beneficiaries of this protection are chiefly two private fur companies.

With the Forest Engineers.

(Contributed by the Canadian Society of Forest Engineers.)

The formation of local forest engineers' organizations is projected in Ottawa and Victoria, B.C.

Advisory Committees.

The following are the Advisory Committees, appointed in accordance with the resolution passed by the last annual meeting:—

Quebec and Maritime Provinces—G. C. Piché, R. B. Miller, R. R. Bradley.

Ontario—C. Leavitt, A. H. D. Ross, T. W. Dwight.

Prairie Provinces—N. M. Ross, W. N. Millar, L. M. Ellis.

British Columbia—Dr. J. F. Clark, H. R. MacMillan, D. R. Cameron.

Quebec Forest Protective Service.

Mr. W. C. J. Hall, superintendent of the Quebec forest protective service, writes:—

'We have had a very successful season. Though there were lots of fires, as the weather was very dry up to the middle of October, we succeeded in extinguishing them all with very little damage done. The only exception was one bad fire on the upper Ottawa, which we are getting details about now. The railway work was most satisfactory.'

The St. Maurice Valley.

Mr. Ellwood Wilson, forester for the Laurentide Company, writes:—Mr. Clyde Leavitt has just been on an inspection trip through the logging operations of the Laurentide Company with me. The sections where top-logging was tried last winter were visited, and Mr. Leavitt made some very valuable suggestions for the conduct of the work this year. Cuttings of other companies were also visited and the contrast was very marked. One company had left pine logs twenty two inches in diameter in the woods and had used large pine and spruce for skids and left them to rot. Tops eight inches in diameter and even larger were common. The condition of such cuttings from the point of view of fire protection is very dangerous and it might be mentioned that this is the only company which has refused to join the Fire Protective Association.

'Mr. M. C. Small is continuing his experiments with top-logging on the limits of the Laurentide Company. Last year this company, for the first time in Canada, tried top-logging and found it so successful that it is to be continued this year and experi-

ments undertaken to show the exact cost and the best and cheapest way to do it. By an efficient system of inspection Mr. Small has reduced the woods waste to the lowest possible point and very materially reduced the fire risk. As an instance of this, two thousand logs were made this fall from the tops of trees used in building a log flume.'

Wide-Awake Western Foresters.

Mr. R. D. Craig, of Vancouver, writes:—'This summer I made a trip from Kamloops to Tete Jaune Cache along the line of the Canadian Northern, as it follows the North Thompson, and came out to civilization at Edmonton (if you consider the prairies civilized). I wrote a description of this trip for the last issue of the Western Lumberman.

'I spent two weeks up the Toba river, 150 miles north of Vancouver, last month. This is one of the finest valleys of timber in British Columbia. We went up in a canoe over thirty miles, all through excellent fir, cedar and spruce. The firs averaged about 8,000 feet, board measure, to the tree, with 125 feet of log length. The cedar and spruce were also very fine. This timber is owned by the Canada Timber and Lands, Ltd., of which Mr. E. Stewart is managing director. The river is drivable throughout the timbered area, and in the summer is navigable for launches for over twenty miles. It is a hunter's paradise for mountain goat, deer and bear.'

Mr. D. R. Cameron writes from Kamloops:—'I have just returned from an inspection trip of the Lower Fraser country, made in company with Mr. R. E. Benedict, of the British Columbia Forest Branch. Our object was to work out a basis for more co-operation in forest protection. The intention is for the Dominion forest rangers to take over the issuing of burning permits, thus preventing duplication of staff and giving the Dominion service better control of the fire situation.'

Mr. E. G. McDougall writes again, dating his letter from Clinton, B.C., (on the old Caribou Road) and describing his work in the valley of the Bonaparte river (which joins the Fraser at Ashcroft). He says:—'I am still at work in the plain drained by the Bonaparte river, and hope to be able to keep the field until well into December. The Bonaparte plain is settled to some extent, and, at a pinch, shelter

for the party and horses can be obtained. Forage, however, is abundant, and in good weather the horses can still pick up a living.

'Timber is nowhere abundant, black pine and a little fir, spruce and poplar forming straggling stands. Except where wind-falls have accumulated, the woods may be travelled in any direction with pack-horses. The country depends chiefly on stock-raising, but there appear to be good possibilities for dry-farming in the future. At present the cost of clearing land is a serious hindrance to development. Even to the rancher, the forest growth, and particularly the litter of wind-fall, is a detriment rather than a resource. The suggestion is repeatedly made that such sections of country should be burned over until the forest has been reduced to a sufficient quantity of wind-break, although it is admitted that to withdraw the rangers entirely and permit indiscriminate firing would be a course involving grave danger to property, if not to human life. Possibly some plan of co-operation between the Government and the settlers, for the safe removal of forest debris, may be evolved in the near future; the expense to both parties would be considerable, but the benefits would be certain and commensurate with the outlay.'

In the Rockies.

Mr. W. N. Millar writes from Calgary under date of Nov. 26:—

'I was out so long on my last trip that I am pretty hard pressed to catch up, particularly as I have to make short trips for special cases every few weeks. I had a very successful trip, covering 850 miles, and have practically completed my examination of the Rockies south of the Athabaska river. In another season we shall have the fundamental improvements well along toward completion, a complete revision of the map with all blanks eliminated, sufficient ground work in the line of volume and growth-tables and primary traverses on which to start intensive reconnaissance, if desired, comprehensive improvement, fire and administration plans for which nearly all of the data has been assembled, a scheme for game preservation completely worked out, and a reasonable start toward a field organization. All we lack is properly equipped men to furnish the motive power and make the things go.

'There's great activity here now in the cabin-building line. We expect to complete at least twenty six during the winter—maybe a couple or three more, all by ranger labor. We have one reconnaissance crew at work on the Athabaska under Clark, examining a large proposed sale, and another going to work in a week on the Brazeau on several proposed mine-prop sales. We will also start a crew tak-

ing volume and growth figures on pine and spruce under McVickar next week.

'We collected thirty bushels of spruce cones and fifty of lodgepole pine cones for the Indian Head nursery, pine on the Clearwater and spruce on the Cypress Hills. This was a most prodigious year for spruce, both white and Englemann, throughout the Rockies, and I rather think throughout the entire West this side the Divide. Nothing unusual in pine or black spruce.

'We had a fire season remarkably free of fires. The Bow River heads the list with only one fire, and that a very small, incipient, "class A" one. We had only four "class C" fires, one on Clearwater, one on Athabasca and two on Brazeau. . . . Am going to Vancouver next month to the Western Conservation and Forestry Association, and perhaps I'll give you some notes about that.'

University of Toronto Notes.

The Faculty of Forestry of the University of Toronto reports a comfortable increase in its registration, there being twenty new-comers, which brings the total number of students up to fifty. This makes the distribution for the different years, beginning with the first year, twenty, nine, ten and five, respectively, besides one in each of five years of the six-year course. The graduating class next spring will count only six.

Mr. Asa S. Williams, a graduate from the original New York State College of Forestry at Cornell in 1903, has been giving a short course of lectures on logging operations. Mr. Williams, after serving two years with the Berlin Mills Company in New Hampshire, one of the largest operators in that state, as forester supervising the lumber camps, with a view of introducing more conservative logging, then engaged as forester to the Lidgerwood Manufacturing Company, who are manufacturing logging machinery. Mr. Williams' business consists in surveying the situation of proposed logging operations and determining what method and machinery are to be used. For the last three or four years he has been engaged in the same business in Canada, mostly on the Pacific coast.

Several of the men in the field were prevented by snowstorms from returning in proper time, but all of them eventually turned up all right.

Mr. Frank Stanley Newman, who had been employed by the Dominion Forestry Branch as forest assistant in the Duck Mountain Forest Reserve, Manitoba, has accepted a position as assistant to Mr. E. J. Zavitz, forester for the Ontario Government, and will probably be placed in charge of the nurseries at St. Williams.

EMPIRE STATE FOREST PRODUCTS ASSOCIATION.

The Empire State Forest Products Association held its 8th annual meeting and banquet in New York, Nov. 13. Mr. Frank L. Moore of Watertown, N. Y., the president, in his address said that the two greatest problems that confronted the people of New York were the practical management of the forests and the regulation of flood waters. He referred to the foolish law of the State of New York by which not even the dead and mature timber on the 1,600,000 acres of state forest could be cut or utilized in any way. He suggested a carefully chosen board might be given the power to decide what trees might be cut in the state forests.

The forestry committee recommended:—Efforts to secure larger appropriations for fire protection. A larger appropriation to the extent of one million dollars annually for additional forestry purposes. And the investment of several million dollars for starting new forests on cut-over lands.

Mr. Clifford R. Pettis, Superintendent of State Forests, estimated that the 1,600,000 acres of state forest preserve was worth thirty million dollars. He pointed out that under proper forest management the annual growth could be taken each year and the necessary forest maintained. The an-

nual growth on this he estimated at 250,000,000 board feet, or one-quarter the entire cut of lumber in the state. At the present time the interest on the cost of this preserve, which was about four million dollars, was \$200,000 per year, the taxes which the state pays were \$150,000 per year, the cost of fire protection was \$15,000 per year, making a total carrying charge of \$365,000 a year. The utilization of the ripe timber would change this deficit of \$365,000 into a net revenue of \$635,000.

CANADIAN FORESTRY ASSOCIATION.

The Canadian Forestry Association is the only popular organization in Canada having for its object the conservation and development of our forests through wise use. It holds conventions and lectures and publishes the Annual Report and *Canadian Forestry Journal* (monthly).

All friends of the forests are eligible for membership, the fee for which is one dollar per year. Members receive without extra charge all the publications of the Association.

All who have not done so are invited to become members to help extend the work.

Address The Secretary,
Canadian Forestry Assn.,
Canadian Building, Ottawa.

SPREADING THE WORK

THE CANADIAN FORESTRY ASSOCIATION wishes all its members and friends a Happy and Prosperous New Year.

In 1914 it hopes to do more than in any previous year in the protection of the forests, which means the protection of the interest of every Canadian citizen.

In this work it requires the assistance of every member. One of the best means of spreading the work is for members to interest their neighbours. A very efficient way of doing this is to send the names of those likely to be interested. The Secretary then communicates with these persons, and experience shows that a good percentage become members.

Help on the work by sending in a list of names to

THE SECRETARY,

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